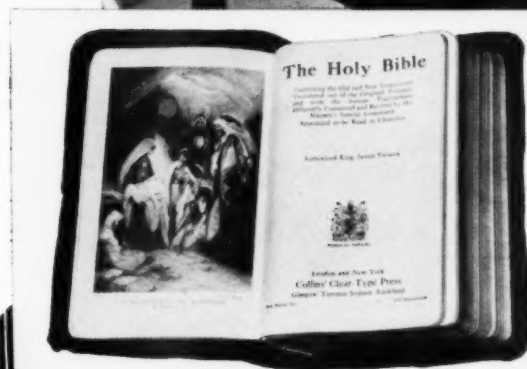


American

FORESTS

DECEMBER 1955

50 CENTS



WHERE YOUR BIBLE COMES FROM, Pg. 8





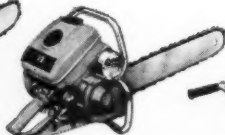
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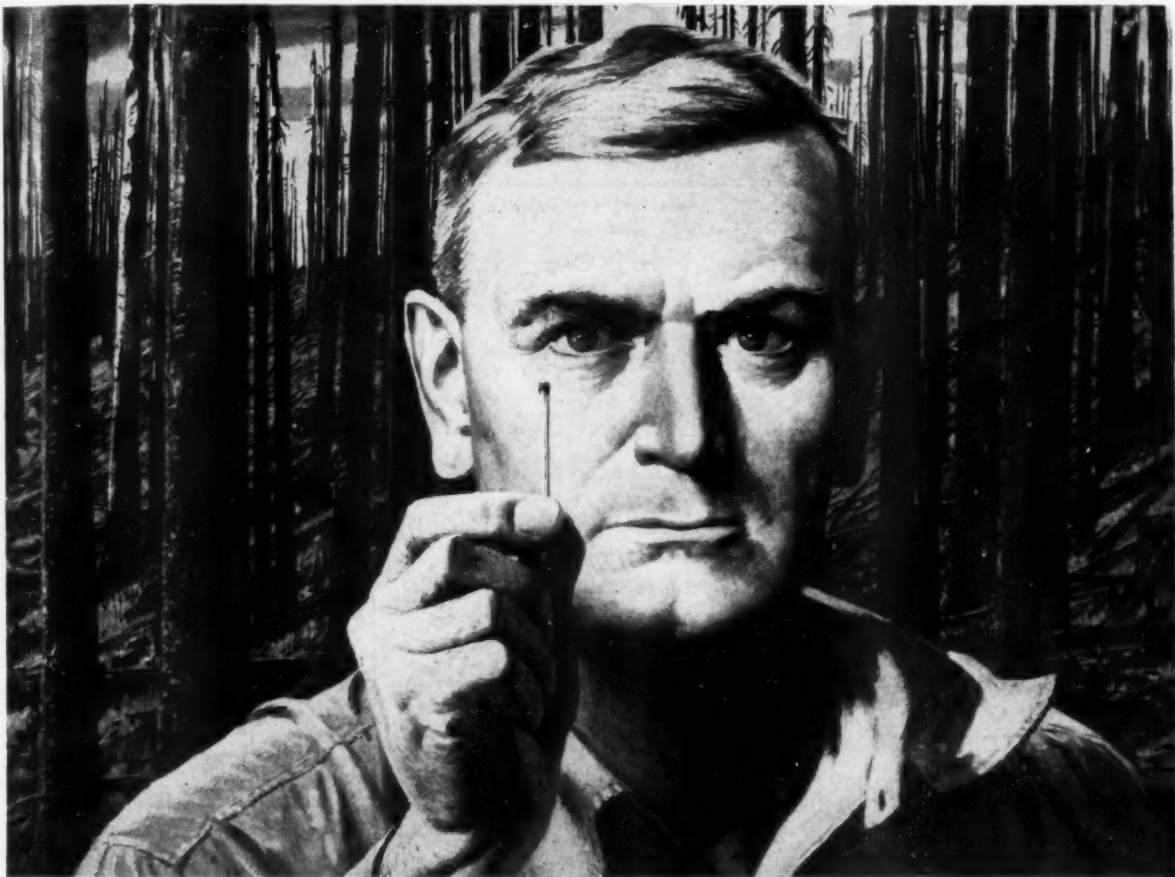


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Volume 61
No. 12
December, 1955

American FORESTS

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James J. Fisher, Art Director

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THE AFA

The American Forestry Association, publishers of AMERICAN FORESTS, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and their part in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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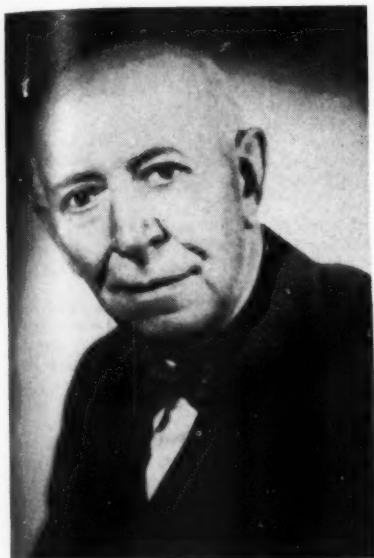
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David Clark Everest

"Mr. Wisconsin"

DAVID CLARK EVEREST, who died October 28, in Wausau, Wisconsin, was one of the best friends The American Forestry Association and forestry ever had. His chair at AFA's directors' table will be difficult to fill. Mr. Everest's meteoric rise in the paper industry amply attests to his imagination, drive and business acumen. In addition to that, he was a one man community relations program both in his own state and in the nation in supporting everything that was good, sound, and in the public interest.

While he was active in dozens of worthwhile organizations including Wisconsin's own fine "Trees for Tomorrow" program, we also have reason to believe that The American Forestry Association occupied a special niche in Mr. Everest's heart. For one thing, Mr. Everest, like Reuben B. Robertson and a handful of other industry leaders, believed in and were working for forestry long before it became a national industry movement. For another, he firmly believed that it is the destiny of The American Forestry Association to boldly and fearlessly lead forestry and related renewable resources endeavor to a new and enlightened era of resources abundance.

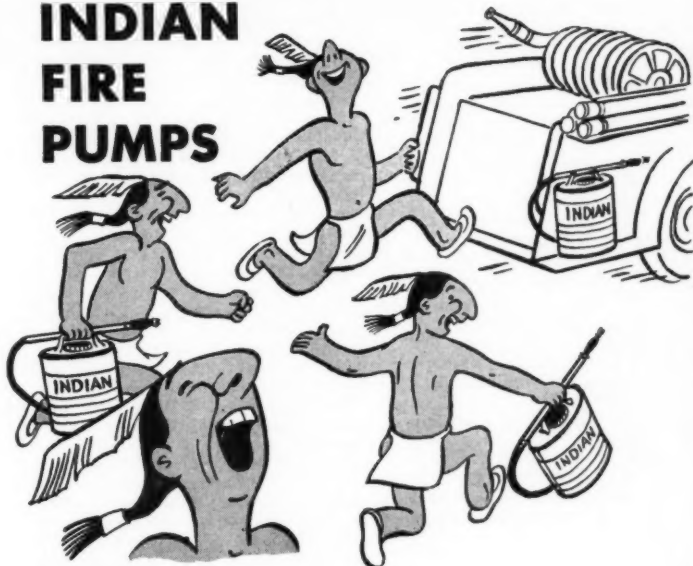
In recognition of his work toward the conservation of our forest resources, AFA presented Mr. Everest with its Distinguished Service Award

(Turn to page 51)

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Letters To The Editor

Arson Conference

EDITOR:

I am certainly one hundred percent behind your conference in New Orleans. I believe that it will take something dramatic to awaken the public and the responsible public officials to the magnitude of this problem. Furthermore, I am convinced that solution to this problem is possible. I will certainly expect the representative of Southern Pine Association to be present at your proposed meeting.

Arthur Temple, Jr.
President and General Manager
Southern Pine Lumber Company
Diboll, Texas

EDITOR:

I was very interested in the comprehensive resume of plans laid down for the Southern Forestry and Woods Arson Conference to be held in New Orleans April 12-14. It is a pleasure to assure you that William Cooper, executive director of Virginia Forests, and vice chairman of the Council of Forestry Association Executives, will attend the meeting in Atlanta, Georgia on November 18. We trust that although our association is new I am sure the membership will be happy to cooperate with AFA in matters of a regional nature.

M. M. Taylor
Executive Director
Trees for Tomorrow, Inc.
Merrill, Wisconsin

NLMA Views With Concern

EDITOR:

With regard to the November issue of AMERICAN FORESTS there are two matters of particular concern to the National Lumber Manufacturers Association on which I would like to comment.

First, Congressman Sikes, in his address, unfortunately failed to make clear that the NLMA policy on Clarke-McNary fire protection calls for a gradual reduction of federal financial participation accompanied by increased lumber industry encouragement of greater State or private participation. The full text of the National Lumber Manufacturers Association policy is as follows:

"The lumber industry believes that organized fire control should be extended, where economically justified, to cover forest land in the United States without organized protection, and that the present fire control measures should be strengthened where needed.

"Protection against fire is a major need to assure continuous production of forest crops. We support the cooperative principle of protection against fires as developed under the Clarke-McNary Act of 1924. This Act has operated successfully for many years under joint effort of State, Federal and private agencies. This cooperative program should be regularly analyzed and reviewed jointly by State and Federal officials and industry representatives to assure its effectiveness and economical administration. The gradual reduction of federal financial participation in the program should be sought. This should be accompanied by increased lumber industry encouragement of greater State or private participation."

On another matter, action by the AFA Board urging purchase by the Government of certain lands in Arizona owned by the

Aztec Land and Cattle Company, in my opinion, reflects the outmoded doctrine that the ills of forestry, real or imagined, can be cured by government ownership and management. With a precedent set by AFA in this case what will prevent the AFA from extending its policy to cover many other areas if "some doubt exists as to whether private ownership could profitably operate and manage the lands and provide for the other resources uses involved at the same time?" Is the AFA so constituted that it can fairly decide what lands should be in public and private ownership? In the complex Aztec case did the AFA Board have all the facts before it and was there sufficient time available to consider adequately such facts?

The Aztec Company has recently stated that it is not interested in the legislation before Congress and that a portion of the lands in question have already been sold to private enterprise. In Arizona the Federal and State Governments own or control 3,055,000 acres of commercial forest land; private parties own only 125,000 acres of such lands. The Government then has a virtual monopoly on the timber growing business in that state. Is it unreasonable for those who believe in the principle of private ownership of property to oppose measures that will create an even greater imbalance?

It seems unfortunate that the AFA Board could find little merit in the various alternatives to the legislation proposed by NLMA. These include exchanges, cooperative management, purchase by the State, and others. Has the path of least resistance become a broad highway with its terminus at the Federal Treasury? Have the road blocks of local initiative and financial responsibility almost disappeared?

As a long-time AFA member I regret the growing tendency of the AFA to become a legislative lobbying organization. It seems to me that its future welfare and its ability to promote American forestry can best be served by avoiding those issues, often minor in scope, which cleave the membership into opposing forces. There is much worthwhile work for AFA to do in promoting common objectives on which all can agree. AFA's commendable action in bringing groups together on the mining claim problem, its support of a Southern Conference on Woods Arson, its educational efforts designed to improve forestry practices, insect and disease control and better utilization of timber resources are a few examples of such worthwhile work on which all can unite in support of AFA.

A. Z. Nelson
Forest Economist
National Lumber Manufacturers Association
Washington 6, D. C.

(Editor's Note — AMERICAN FORESTS is happy to publish this letter by Mr. Nelson, a long-time AFA member who was a delegate to the Higgins Lake Conference. In his references to the Aztec lands, Mr. Nelson presents a point of view that obviously is at variance with that of AFA's Board at its Jacksonville meeting. The Board, comprising a representative cross section of American citizens including industry members, gave this problem very careful consideration and weighed all points of view including that of NLMA. The

Board believes that its findings are sound in terms of the best interests of longtime resources management on the ground. It stands on its decision.)

October Issue

EDITOR:

I want you to know that everyone in the Furniture, Plywood and Veneer Council are most grateful for the grand article you did in your October issue.

I am suggesting to Roger Wolcott that he follow through so this article could reach the farmers and landowners. They are the people who we want to contact and who should be reading this article or any other article pertaining to sound forestry practices.

It is awfully nice to sit here at my mahogany desk with a Dictaphone and read a wonderful issue such as this one, but what we need to do is get down to the bottom of this proposition and let the farmers and landowners know what is going on and what is needed.

Ralph Edwards
Henredon Furniture Industries, Inc.
Morganton, North Carolina

EDITOR:

I also want to compliment the association on their October issue of the "AMERICAN FORESTS." It is very interesting and enlightening in the discussion of southern forestry. The coverage and detail of the states' activities and the growth and development of the southern forest industries is very good. I hope we can see other areas in the United States discussed in such a way.

Christopher Comstock
Box 686—College Station
Pullman, Washington

EDITOR:

In the issue of AMERICAN FORESTS for October and on page 28, the article "The Big Cypress" by Jeanne Van Holmes, was very interesting because it was myself with three Illinois youths who made the exploratory trek into Corkscrew Swamp in Collier County in 1952. I have only known Jack and Jeanne Holmes since March 20, 1954 and learned to appreciate them because of the splendid work they do.

Certainly, Mrs. Holmes has given your readers a glorious account of The Big Cypress. Her narrations are accurate and they are compelling in that she relates more research and diligent study of this great area. It is sad to see the destructiveness left after the loggers left. However, it is quite possible that wildlife will adjust itself and since the entire area lends itself to recreation in a big way, perhaps there may yet emerge another trek to explore the cut over area and see just what it forebodes.

Ernest A. Taylor
3212 Jules Verne Court
Tampa 9, Florida

EDITOR:

We observe extraordinarily good editing in your October "Southern Forestry" special edition. Such an effort is bound to help all phases of resource conservation.

In a word, congratulations to you and your staff.

Bernhard A. Roth, Head,
Soil Information Unit
Soil Conservation Service
Upper Darby, Pa.

Washington



Lookout

By ALBERT G. HALL

THE TERMINATION OF FEDERAL SUPERVISION OVER THE TRUST AND RESTRICTED PROPERTY of the Klamath Indians, as provided by Public Law 587, 83rd Congress, may set the pattern, if successfully done, for similar terminations of federal supervision over other Indian tribes. Under the terms of P. L. 587, a firm of management specialists has been engaged to arrange for the appraisal of all the tribal property. Then, each adult member of the tribe, and heads of families acting for minors, may either withdraw from the tribe and have his interest in tribal property converted into cash, or he may leave his interest in a tribal organization of which he will be a stockholder. The number of Indians who may elect to receive cash or to receive a tract of land in lieu of cash is now unknown, although estimates have been made that as many as 75 percent of them may choose to withdraw from the tribe. Appraisals of the lands by economic units of various sizes will soon begin. The decisions of the individual Indians do not have to be made until after all the appraisals are completed, and the per capita value is determined.

THE IMPACT OF THE BREAKING UP OF THE KLAMATH INDIAN FORESTS may have a serious effect on the sustained-yield management of the forests and on the Klamath Basin timber economy. If a large number of the Indians choose to withdraw from the tribe, sufficient units of timberland will have to be sold to satisfy their interests. While the units will be defined for the possibility of continued sustained-yield management, there is no assurance that they will be so managed. Under the administration of the Bureau of Indian Affairs, the Klamath forests since 1913 have provided an average annual cut of over 100 million board feet. This has sustained from 20 to 25 percent of the local timber economy. Allowable cut for the remainder of the first cutting cycle of old growth timber is now about 80 million feet, still a 20 to 25 percent factor in the present timber economy of the area. A possible development could be that following the sale of the timberlands to the highest bidders, a number of the purchasers may attempt to recover a good part of their investment by accelerating the harvest of the timber, temporarily increasing the installed mill capacity of the area, and disrupting the orderly flow of stumpage to the local market.

THERE IS HOPE, HOWEVER, THAT SUCH SALES OF KLAMATH FORESTS as are made, will be to those members of the industry that have helped establish the enviable record that much of the western industry has made in sustained-yield management of its own lands, but herein lies a problem. If the timberland is sold to the highest bidders, as required by the law, chances are that many of the units will be bid to retail prices, which will encourage early liquidation. For a person or company to purchase such units with the thought of holding them and taking the attendant risks through the years before harvest, it is necessary that the lands be acquired at a more nearly "wholesale" price.

THAT THE AMERICAN INDIAN SHOULD BE RAISED TO FULL-FLEDGED CITIZENSHIP, free of the wardship of the government is now an accepted policy. How to give him that status when the bulk of his assets are of a communal nature is a difficult question to answer. The program for the Klamath Reservation presents a challenge to the Indian and to the forest industries of the area.

A SOIL AND WATER CONSERVATION ADVISORY COMMITTEE has been named by Secretary of Agriculture Ezra Taft Benson. Purpose is to advise the Secretary, his staff and department agencies dealing with soil and water conservation programs. The first meeting of the 18-member group was held in Washington, D. C., October 27-28.

(Turn to next page)

WASHINGTON LOOKOUT—(Continued)

Among the members are: Mrs. Katherine Jackson Lee, a member of The American Forestry Association's board of directors, and William Rosecrans, chairman of the California Board of Forestry, and former AFA president.

THE 25 PERCENT OF NATIONAL FOREST RECEIPTS for the Fiscal Year ended June 30, 1955, which is distributed to the states in which the forests are located, totaled \$19,381,154.57. The state portions varied from \$30.54 for North Dakota to \$6,104,818.03 for Oregon.

THE FOUNDATION FOR AMERICAN RESOURCE MANAGEMENT, non-profit California corporation has been established to do educational and research work with natural resources. The first undertaking will be in the field of forestry, stressing the management of forests for assured continual productivity. Funds for the research of the Foundation have been assured over a period of years, and the work will be conducted on a project basis with researchers selected from candidates for advanced degrees, forestry professors on sabbatical leave and others. Currently FARM, as the outfit is abbreviated, is seeking competent research men to direct projects dealing with natural reforestation following selective cutting and the conversion of brush fields to conifer stands. One project already under way is the development of a bibliography on redwood literature. Office of the new private research organization is: Monadnock Building, San Francisco 5, California.

PUBLIC LAND RECORDS ARE BEING MODERNIZED by Interior Department's Bureau of Land Management. A contract has been let to a York, Pa., tabulating service firm for preparation of a control document index. According to Edward Woolley, BLM director, this is the first innovation in public land records since 1812. The control document index will eventually do away with the time-consuming tract books and will consist of microfilm copies of patents, orders of withdrawal and restoration, and other records on IBM cards. Yet to come is a total revision of the basic land records to make the official record of the public domain complete and up-to-date. In another move to clean up the land records, Secretary of the Interior Douglas McKay has issued regulations, under legislation passed last August, for the recordation of scrip, lieu selection and similar rights to public lands. The unrecorded claims involve rights granted for various reasons, but chiefly those granted as rewards for services rendered the Nation during the 19th century. Claimants must record their claims by August 4, 1957 otherwise their claims become invalid.

FOREST SERVICE WILL BE ABLE TO COMPLETE MODERN INVENTORIES AND MANAGEMENT PLANS for all the commercial national forest lands in a 10-year period, at the present rate of accelerated appropriations for timber management. It appears also that on a tentative basis, pending inventory, allowable cut from the national forests can be increased from the former 6.9 billion board feet to about 7.75 billion, because of improved utilization and increased commercially operable areas. With Alaska national forests included, the cut could be 8.5 billion feet. These possibilities were reported by the Forest Service in a discussion of the study completed last spring by McKinsey and Company, a firm of management-engineering specialists that had been engaged to study the timber sales activities of the service. Edward P. Cliff, assistant chief in charge of national forests, in reporting on recent developments in the business aspects of national forest management, said, "The Forest Service has received much stimulation and benefit from this management-engineering undertaking. . . . Major developments within six months since the submission of the McKinsey and Company report strikingly demonstrate the dynamic present status of the national forest timber business. Progress is being made and at a more rapid rate than is generally realized."

ALLOWABLE CUT ON NATIONAL FORESTS MOVES UP. A revised timber management plan allowing a 20 percent increase in the volume of timber cut each year on a 847,000 acre unit of the Mt. Hood National Forest in Oregon has been approved by Richard E. McArdle, Chief of the Forest Service. The new plan for the area, known as the Clackamas-Sandy working circle, will allow an annual cut of 200,000,000 board feet as compared to the 165,000,000 board feet previously allowed. The increases in cut are possible because of improved utilization of timber by the timber industries and greater use of secondary species which were not formerly given full weight in calculating allowable cut. Another highly important factor in the increase of allowable cut is the use of modern road building and logging equipment which has made it possible to log rough mountainous areas formerly considered inoperable. The new inventories are being made with the help of aerial photography. Air photos have revolutionized timber cruising, making possible increased accuracy and lower costs as compared to former methods.

EDITORIAL

The Task Ahead

THE good news in the most encouraging report on the nation's timber estate ever released by the Forest Service is that timber growth in the United States is increasing, now being nine percent greater than it was in 1944. Eastern softwood growth is estimated to be 12 percent greater than in 1944 and hardwoods growth 15 percent greater, the new Timber Resources Review shows. (One half of all sawtimber growth occurs in the South, where nearly one-third of the total is in southern yellow pine.) In the West, sawtimber growth decreased three percent between 1944 and 1952. As old growth areas in the West are cut and more second-growth stands reach measurable size,

western growth too should substantially increase.

The news that the growth curve is definitely up should give our foresters a big psychological lift and special credit for this forest management victory should go to our public and more recently our industrial foresters. Reassured that the millions of dollars invested in forest management in recent years definitely pays, foresters should now have the self assurance and fortitude to tackle the really formidable long-range tasks that are also outlined in this challenging report. For the "news behind the news" in this review that required three and a half years to com-

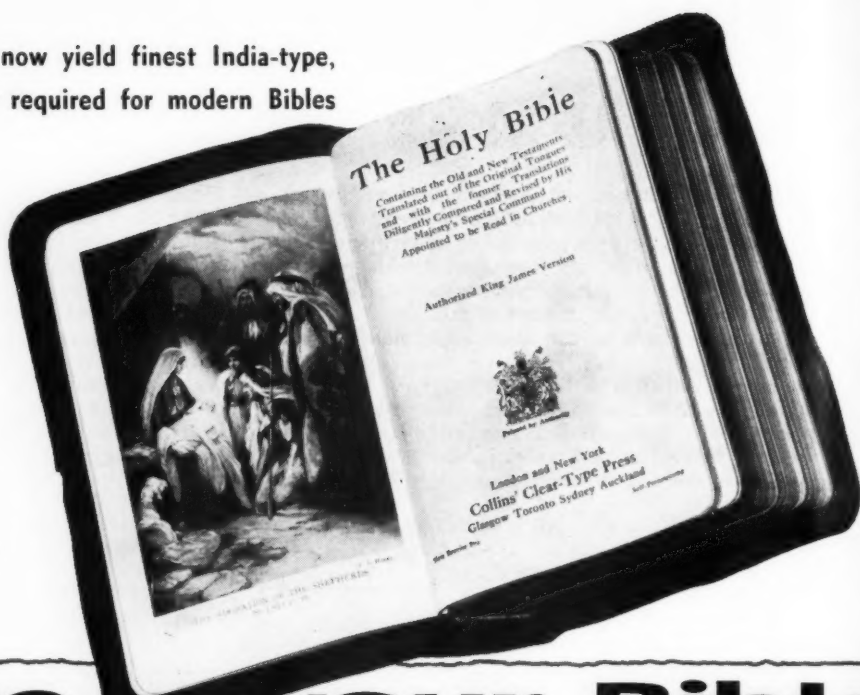
(Turn to page 45)

Boy! What a Tonic



Forestry products now yield finest India-type,
light-weight paper required for modern Bibles

By E. JOHN LONG



where your Bible

IT is probably a safe assumption that every family in the United States has at least one copy of the Bible, and many have several. Thanks to the United Bible Societies, the Gideons and other distributing agencies you will find copies in most hotel and tourist court rooms, at American military bases and dependencies overseas, and in libraries, clubs, recreational facilities, and educational institutions. Many persons carry small pocket editions of the Bible with them in their daily lives, and particularly when they travel.

The Bible is still the Number One "best seller" among all books, even though it is also the most retained of all volumes. Individual copies never really go out of usage, and while they may be given away or handed down to children and relatives, Bibles are almost never discarded, as are other books.

All of which means that the Bible, as a book, must be better made and better printed than the average publication. Durability of paper, binding and cover are important factors. People want Bibles to last, and generally they don't want them to be any bigger or heavier than is absolutely necessary. While the day of

the ponderous family Bible, with its hundreds of pages printed on thick bond paper and bound in tooled leather, may not be past, publisher's records in recent years indicate that the trend is to volumes weighing from about a pound and a half to not more than seven pounds, printed on the finest quality India-type paper.

This trend has been accelerated, of course, by vast improvements in the manufacture of high-grade papers in the United States during the past decade. Regular Bible paper has always been thinner and less transparent than ordinary book papers. Thinnest, easiest on the eyes and most durable of all, is the Bible paper now being produced in large quantities in the United States.

For decades America's supply of India paper was imported from Europe, but quantities were not sufficient to supply our demands for the printing of fine Bibles.

These so-called "India" papers actually originated in China, but were designated "India" because European traders first obtained them there. India paper has four basic advantages: thinness, opacity, strength and whiteness. Grades are by weight, the commonest being 17¼,

20, 24, 30 and 40 pound papers, which are determined by weighing 500 sheets measuring 25 by 38 inches.

In the late 1930's, a farsighted industrialist named Harry H. Straus realized that if a major war came, America might be cut off from European sources of specialty papers, or that foreign mills which made them might be diverted to the making of munitions. So at Pisgah Forest, far up in the mountains of western North Carolina, he established the Ecusta Paper Corporation to manufacture fine thin papers similar to those which had previously been imported.

That was in 1939, and Mr. Straus had secured the services of French paper experts to teach native North Carolinians the tricks of the trade. Although his first local employees had had no previous training of such delicate paper, they soon improved upon the traditional methods of the French.

The most spectacular feature of the new Ecusta development, however, was that paper was fabricated directly from American flax. This process differed from the European methods since Ecusta made paper from basic materials, while foreign

paper was made from various raw materials which included discarded linens. This was good news, too, for flax growers of Minnesota and California. They had been raising flax for seed, and throwing away the straw, many thousands of tons each year.

As expected, overseas supplies of India-type papers were soon cut off, and Mr. Straus' foresight was vindicated. While Ecusta still produces large quantities of flax-base India paper, much of the Bible paper is now made from high-grade wood pulp.

In 1949 Ecusta was purchased by Olin Industries, Inc., which in turn merged with Mathieson Chemical Corporation in August 1954 to form the Olin Mathieson Chemical Corporation, one of the largest companies of its kind in the world.



John Eliot translated Bible for Mass. Indians about 1643

for papermaking arrives in huge stacks, by boxcar, from the New England states and Canada. However, the nearby forest plays a very important role. This type of papermaking requires vast quantities of pure, fresh water. From the watersheds of Pisgah National Forest flows the Davidson River, vital source of the millions of gallons of water used daily in the manufacturing processes.

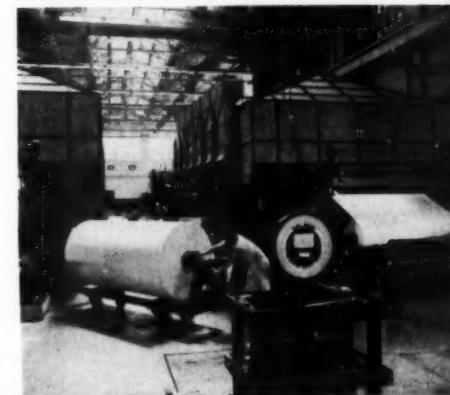
"We can't use local wood," my guide explained, "because the nearby forests are largely soft woods. India-type paper requires the finest



Ecusta Paper Corporation, N. C., manufactures fine Bible and printing paper



Wood pulp and flax fibres are shortened and hydrated in the refining beater



Bible paper being formed and dried by the Fourdrinier Papermaking Machines.

ecomes from

Recently I had a chance to go through the Ecusta plant and see for myself the details of manufacture of this comparatively new American industry. The plant is a huge establishment, spreading over a hundred acres. All operations take place in clean, modern buildings, linked by covered areaways.

Because the Ecusta plant is situated within the shadow of the Great Smokies, and is partially surrounded by the heavily-forested slopes of Pisgah National Forest, I naturally expected to see great logs floating down the mountain torrents right to the plant's front door.

But Ecusta draws not one stick of wood from these forests. Wood pulp

hardwood spruces—red, black and Norway. To save shipping size and weight, the spruce is processed into thick white sheets of pulp before it is shipped to us."

He pulled some from a bale that had just been rolled from a boxcar on the Southern Railway siding. It very much resembled a heavy blotter, or perhaps a paper blanket.

Since the spruce fibres have been cooked and bleached before they reach Ecusta, the wood pulp sheets are not subjected to any of the processes of the pulp mill. The sheets are moved from the storage warehouses to the refining room by electric trucks. Here the individual fibres are shortened and hydrated in



Latin Manuscript Bible written by hand about 1250—an illuminated manuscript, black text on vellum

refining beaters, a process using thousands of gallons of water in itself.

The resulting solution consists of vast amounts of water and shortened fibres, ready for the Fourdrinier paper-making machines. These machines, of which Ecusta has nine, are wondrous things to behold. Almost a block long, and a story and half high, they automatically perform the miracle of converting the slurry into thin, opaque and very white paper.

As you stand and watch it, it seems hardly possible that all those wheels, gears and gadgets can operate so smoothly and rapidly to produce a uniform sheet of the finest Bible paper. After the paper is dried it is wound into a 4,000 pound roll—enough for 2,600 average Bibles.

All along the way, through the various processes, tests are being made at frequent intervals, and samples taken to little plant-side quality control laboratories.

"About 175 of the 1500 employees of the paper division are in research, testing and quality control work," my guide explained.

Although inspectors watch the paper carefully as it streams off the paper and rewinding machines, it must again be inspected before the rolls go into storage racks for conditioning. If the paper is destined to become Bibles, it is then taken to reamers to be cut into sized sheets for shipping by rail or truck.

Although India-type papers appear to be fragile and weak at first glance, even the thinnest has amazing tensile strength. This was demonstrated to me most convincingly by E. F. Galligher, President of the Good Will Distributing Company

of Gastonia, N. C. Mr. Galligher, a former door-to-door Bible salesman, grasped one sheet of a seven-pound Bible containing 1600 pages, and then let the rest of the Bible go. It hung suspended from single sheet, proving that both the paper and the binding were top quality.

In the last few years the demand for India paper in publishing has expanded far beyond its primary use in fine Bibles. Increasing quantities now go to makers of dictionaries, insurance rate books, handbooks of chemistry and other sciences, etc. Other fields have been suggested—guidebooks, similar to the pre-war Baedekers; manuals for use on planes and in other places where weight and space must be kept at a minimum; company histories, catalogues; bibliographies, etc.

While India paper is comparatively expensive, where wear and tear of constant use, and size and weight are factors, it is the most economical in the end.

To return to its use in Bibles, Ecusta paper can be found in several noted editions of the Bible, including those published by the World Publishing Company, the Scofield Reference Bible, the Watchtower Bible and Tract Society's Bible, the Christian Science "Science and Health," Oxford University Press' King James Version (Pilgrim edition). Ecusta also supplied the paper for the first pocket-size Bible printed by offset lithography, a gem of 1,368 text pages.

Many people regard the Bible as a static thing. But revisions are constantly being made and the number of translations into foreign languages and dialects is increasing every year—all of which means, of

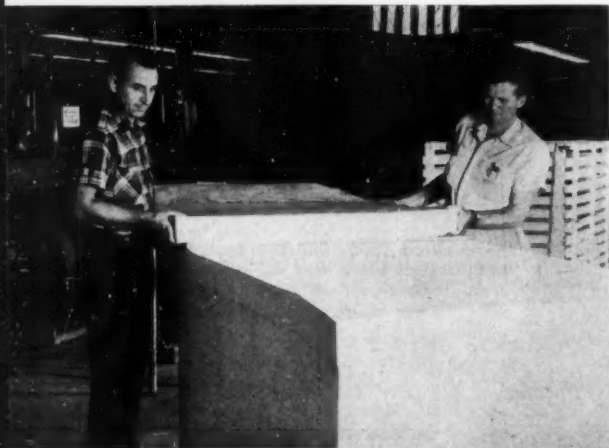
course increasing demands for paper and binding materials. According to the American Bible Society, which since 1816 has distributed many millions of Bibles, Testaments and Gospels in 1,089 languages; changes are necessary because of changes in modern languages and also because, as scholars become better acquainted with the original Hebrew, Arabic and Greek texts in which the Bible was first written, certain revisions seem appropriate.

While the domestic demand for Bibles continues unabated, the foreign language field presents an extensive future market. The French Academy lists 2,796 languages and dialects in the world. Nearly a third of these have no translations of the Bible, and others have only certain parts of the Scriptures. Some languages still do not exist in printed form, which means that we must await the efforts of missionaries working with Christian natives before attempting to publish. Chiluba, spoken by two million people in the Belgian Congo, first came into print when parts of the Bible were translated into that tongue. This led to a school system there.

In the United States alone it is estimated that about 3½ million Bibles are published every year. If these Bibles average a pound and a half each, then about 2,600 tons of paper, India as well as other types, is needed. Add to this the paper required for the 2½ million Bibles, 3½ million New Testaments, and about 20,000,000 Portions sent overseas, and perhaps you will agree that the version of St. John in the Apocalypse (Rev. 22:2) has come true: "The leaves of the trees are for the healing of the nations."

As many sizes of Bible paper are required, guillotine cutters are used to trim the reams to the desired dimensions

The all time "best seller" requires over 2,600 tons of paper for three and a half million copies printed annually in United States



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"How are my Cedars?"

By SAM MIMS

ON the north side of Lenhardt Road, five miles from Easley, South Carolina, a motorist will see a long row of cedar trees, some of them stately and beautiful, most of them ugly and mutilated. Only a few of them have escaped vandalism.

The trees in this mile-long row are equal distance apart, indicating that someone planted them there. Who? Not a practical farmer who planned to grow them for long-lasting fence posts. But definitely a romantic sort of person who dreams of beautifying the world.

There is something intriguing about those trees, something that stirs the emotions, something that indicates they have a story to tell, a story of mingling joy, misery and suffering.

T. M. Jameson and his seven sons attempted to transform one of their cotton fields into a pasture of Bermuda grass. But soon after the cultivation of cotton was abandoned the warm soil seemed to invite the wind to bring down from slopes of

the Blue Ridge Mountains myriads of cedar seeds. And in a few years the area was covered with slender green seedlings.

"Bermuda grass can't grow in that field because it's too much shaded with cedar seedlings," Mr. Jameson complained. "They've got to be destroyed," he added.

Six of his sons agreed, but not the youngest one. He argued vehemently that it is a sin to destroy anything as beautiful as a cedar tree, and he quoted the Bible to support his contention: "Trees of the Lord . . . which He planted; where birds make their nests."

Then the youngest son, James Lake Jameson, outlined his plan. He wanted 530 of those seedlings to transplant along both sides of the highway, from George's Creek to the Jameson home. "Pretty things make people better and nothing is prettier than cedar trees," he said to his mother." And she agreed.

A few weeks later he timed a task he'd set for himself. He spaded five holes on the north side of the high-

way, went to the old cotton field and dug up five seedlings, then returned to the holes and planted the young trees. In this manner he was able to make an estimate of the total time required to complete his project.

The result of his calculations was discouraging, particularly since he knew that the hours required to dig up and transplant 530 cedar seedlings would have to come out of his spare time—if there is any such thing on a farm. Autumn and winter are the suitable seasons for tree planting, but they embrace school months. In those seasons daylight is short—dawn and dusk not many hours apart. Ground was hard along the highway and spading would be tough. The road was nearly a mile from the old cotton field.

It might take him three or four winters to do the job, but the pleasure he'd get out of seeing those trees grow and flourish and the joy they'd give to neighbors and tourists who passed along the highway, all of these idealistic returns would be

(Turn to page 54)

The nation's living Christmas tree has become a fine American tradition and one of the main public events in Washington, D. C.

Christmas **EVES-DROPPING**

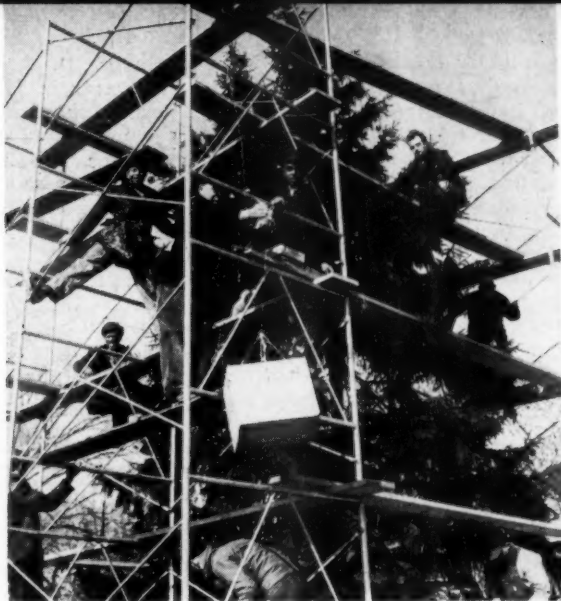
By PEG KIENAST

Messages of hope, cheer, and "Peace on Earth" are symbolized by the lighting of the nation's Christmas tree





A living tree, the species varies, is brought in, set for the occasion, and later "spooked" away by the Park Service



Next, a scaffold is erected to help string the bulbs, which remain lighted each evening throughout Christmas season

NOT everyone follows an idea around Washington for 31 years. Since I have devoted so much time and sentiment to keeping an eye on the Nation's Living Christmas Trees, a report is about due the membership of the association which sponsored it.

There have been inspiring occasions 'round about this symbolic tree. The first national Christmas message, treeside, was placed on press wires in 1923 when Calvin Coolidge lighted up a giant fir cut in the heart of the Green Mountains and sent to him from Middlebury College, Vermont.

The next year The American Forestry Association, in the name of its membership, decided to sponsor a living Christmas tree to touch off lightup time in all the communities and homes of the nation. The use of living Christmas trees had been one of the association's projects since Mrs. Warder Higgins, of Montana, submitted an article on "A Living Tree that Tells the Story." Letters by the hundreds had come in applauding the idea. So the living tree for our nation was actually an enlargement of an idea which had already taken hold.

From that day to this, five Presidents, Coolidge, Hoover, Roosevelt, Truman and Eisenhower have paused in the midst of pressures of time and circumstance upon them to flood the dark with light, and to send out messages of cheer and hope and Peace on Earth. Their words flowed according to the measure of

the men, and the times in which they found themselves.

Coolidge in 1924 and 1925 accepted the trees in the presence of more than 2,000 persons. There was no speech.

Herbert Hoover, in his turn, found himself speaking to citizens who had been trying to assure a cheerful Christmas for all of Washington's poor and unemployed. Drives for food and toys preceded Christmas. In these activities Mrs. Hoover played a generous part.

There was not much that could be said in depression days, but speaking to many hundreds of people huddled in the bitter cold, Hoover said, "Fellow citizens of Washington, and my countrymen throughout the land, it gives me great pleasure to take part in this community effort. But it gives me greater pleasure still to wish you a very Merry Christmas and a Happy New Year."

When the depression had ended, Roosevelt in 1933 led the nation in lighting up for Christmas. In Sherman Square, with nation-wide network coverage, he lit the first tree since the lean years and delivered his message "Love thy neighbor as thyself."

He said "May the practice of that high idea grow in us all, in the years to come." He said he was happy because he had the "deep conviction that this year marks a greater national understanding of the significance, in our modern lives, of Him, whose birth we celebrate."



President and Mrs. Eisenhower viewing the tree-lighting pageantry in 1953

In December, 1941, the first war Christmas in 24 years, the aspect was different though the President was the same. The holiday came at a time when American and British experts were working together in Washington on the master plan of war. After lighting the tree Roosevelt and Churchill were to devote their Christmas Eve at the White House to minute consideration of

joint military operations. Nor was there a holiday in various plane factories, munitions plants and shipyards, as the relentless battle of production went on.

But, first, at twilight on Christmas Eve, on the south lawn of the White House, the President and Prime Minister extended their messages to the people—messages plain in words and deep in conviction.

"There is demanded of us also, the preparation of our hearts, the arming of our hearts! And when we make ready our hearts for the labor and suffering, and the ultimate victory which lies ahead, then we observe Christmas Day with all its memories and its meanings, as we should."

Introduced by President Roosevelt as one of the great leaders of the millions of free peoples who are now joined in conflict against the "evil things"—the nation heard Winston Churchill pledge that "by the sacrifice and daring of today's fighting generation the children of both the present and the future shall be assured of their inheritance and the right to live in a free and decent world."

"For this ideal," he said, "rather than for a great ambition or lust for gain, the nations opposing Hitlerism are now at war."

Despite the pressures of war, from 1941 to 1945 there was always time set aside on Christmas Eve for the man in the White House to light the nation's Christmas tree and to read the Christmas Carol to his family.

When Truman was elected, after filling out the unexpired term of

Franklin D. Roosevelt, and when the horror of Hiroshima was past, Truman chose to light his Christmas tree by remote control from Independence, Missouri. He had been enjoying the easy informality of the Midwest home town, walking, talking, getting a haircut from his old barber.

He pleaded for a haven for war refugees. "Sitting here in my home, so like all other homes over America, I have been thinking about families in other, once happy, lands. We must not forget that there are thousands and thousands of families homeless, hopeless, destitute and torn with despair on this Christmas Eve.

"For them, as for the Holy family on the first Christmas Eve, there is no room in the Inn."

At this time the Truman Administration was pressing Congress to let another 134,000 displaced persons find a place here.

Another change of Administration, and in 1953 with Mrs. Eisenhower on his arm, Dwight D. Eisenhower walked up the Christmas path to yet another altar. At the foot of a Christmas tree, flanked by enormous candles, our President made his "Prayer for Peace."

"Our national and individual blessings are manifold. Our hopes are bright, even though the world still stands divided in two antagonistic parts."

He prayed for strengthened efforts to forge abroad "those links of friendship which must one day encircle the world, if people are to survive—and live in peace."

Behind the pageantry of tree

lighting, there is of course much preparation.

This annual ceremony is considered one of the main public events in the National Capital. Whether it be clear, cold, or clouded with rain and mist, Christmas begins here for thousands of Washingtonians and their neighbors from nearby Virginia and Maryland. Millions listen in to the broadcasts of the event. It is customary for the tree to remain lighted each evening from Christmas Eve through New Year's Day.

As we recall the ceremonies of various years, we realize that the changing face of the nation is reflected in the news-shots of men and women who came to stand beside our leaders as the trees were illuminated.

Providing a tree is in itself a chore.

The first tree died, and trees to follow were taken up with great balls of earth surrounding their winter-quiet roots. From fir, to Norway spruce, to bluespruce, to Fraser fir, to live red cedar, replacements came. Sometimes the symbolic tree stood before the White House; other trees were placed in Sherman Square on grounds to the South. There were trees in Lafayette Park. Later, when the ceremony outgrew the parks it was moved to the Ellipse. Here, living trees have been brought in, set for the occasion, and later spooked away by the Park Service when the Christmas magic is over.

The ceremony has grown to such proportions, as the tradition has been taken to the heart of the nation, that making ready for Christ-

A "Prayer for Peace" was President Eisenhower's part in 1953 ceremony



Harry S. Truman pleaded for a haven for refugees of war

Raising national morale was Franklin D. Roosevelt's aim



Herbert Hoover felt proud to participate

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Ovid M. Butler made the presentation of AFA's tree to the nation

mas tree lighting involves enormous technical assistance to send forth the message and to keep safe the throngs that begin their Christmas here.

There is always a Presidential stand; there are stands for a band, and for carollers. There are stands for photographers. There are ramps to be built over curbs. There are cables to be dragged through power company tunnels and brought to the site, safeguarded where they are exposed. There are floodlights to be planned, and lights for the tree. There are plug-in boxes for motion picture photographers. There are rope or cable barricades to be strung for control of the crowd, and usually a low picket fence around the tree. Tables have to be set up for radio broadcasters. There are Scout and military honor guards to be placed.

Calvin Coolidge, 1924, accepted the first tree from AFA



Someone has to see to invitations for dignitaries, seating protocol, decorations, and flowers for the First Lady.

A scaffold has to be erected for decoration of the tree, and it has to be taken down.

Plans are made under the joint sponsorship of the National Capital Parks and the District of Columbia Recreation Department, leading Washington citizens, public officials, and members of the Board of Trade serve on the Committee.

Even in 1924, the year in which The American Forestry Association provided the first tree, there was a Committee.

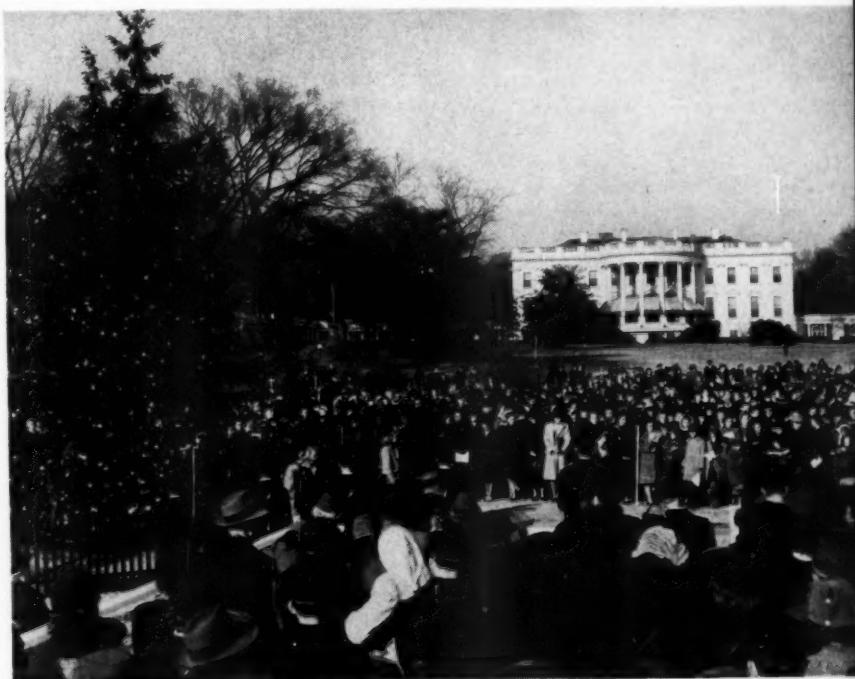
Lillian Cromelin, former Associ-

ness fans, with a maverick or two from big lumber and pulp companies smart enough to plump for sustained yield.

When you have a large membership, you need a small committee to do the work. I was assigned to help get up a city-wide committee, and to represent the association in the spadework.

All we had to do was to produce the tree, the participating public, and the President of the United States!

Lillian Cromelin and I took a walk around the White House grounds. There was no suitable tree in place and growing. But we re-



Besides the crowds that attend ceremony, millions hear it on the radio

ate Editor of *American Forests* magazine had seen the 1923 ceremony, using the Vermont tree, and found it impressive. Lillian was given to thinking up special occasions for planting trees. She could just visualize the impact of a planned ceremony on the public and she knew what she could do to please the member-subscribers of the association with a center spread in the magazine featuring a "Living Christmas Tree for the Nation." What Lily wants, Lily gets.

The member-subscriber readership at that time was a rather sedate and serious collection of professional foresters, college professors, working conservationists, dedicated wilder-

membered that *American Forests* had as an advertiser a woman nursery owner in New England. She was very easily persuaded that it would be an honor and a privilege to supply a living Christmas tree for the nation.

It was presented in the name of the association, but I remember the generosity of the donor of the big Norway spruce. The lady arborist came down with the tree on the truck, and I paid her the compliment of being there with photographers. When it came to taking pictures there was some difficulty. A hole had been dug by order of park officials. The workmen were

(Turn to page 57)

ARSON CONFERENCE PRESSED

ATLANTA, GEORGIA, November 18—A Southern Forest Fire and Woods Arson Conference was planned here today by representatives of major southern forestry groups to be held in New Orleans, Louisiana, April 13 and 14, 1956. The purpose of the conference will be to brand the woods arsonist as a criminal in an effort to stamp out the fire menace in the South.

The arson conference carries the endorsement of the southern governors who pledged their full support at their recent meeting at Point Clear, Alabama. The 21 man planning group resolved that the conference's three main objectives, pursuant to the Governor's Resolution, should be:

- 1) inform the public about the extreme seriousness of the woods arson problem and its effect on the economy of the South;
- 2) arouse public opinion to brand the woods arsonist as a criminal and against all those responsible for starting wildfires; and
- 3) stimulate future action at the state level to eradicate the wildfire menace in the shortest possible time.

Lowell Besley, Executive Director-Forester of AFA, and the elected chairman of the conference stressed that key state committees appointed by the governor will carry the load in gaining public support at the conference. Those will include representatives of law enforcement groups and other representative professional and citizens organizations. J. H. Kitchens, Jr., executive secretary of the Louisiana Forestry Association was elected secretary. Governor Robert Kennon of Louisiana will serve as host of the conference and visiting governors.

The General Committee for the conference, which includes most of the forestry industries, agencies and organizations in the South, elected an executive committee from the conference's sponsors. Besides Mr. Besley and Mr. Kitchens, this committee includes: A. R. Shirley, American Turpentine Farmers Association Cooperative; F. H. Claridge, Association of State Foresters; William E. Cooper, Council of Forestry Association Executives; J. Walter Myers, Jr., Forest Farmers Association Cooperative; S. P. Deas, Southern Pine Association; and Henry J.

Malsberger, Southern Pulpwood Conservation Association.

"The conference represents a tremendous opportunity to build up a great inspirational force that will serve as a spring board for future action at the state level," Besley said.

According to a preliminary agenda outlined by Mr. Besley, the sessions held on the first day of the conference will cover the following major points: the importance of forests to the South, the impact of serious fire losses on all elements of the general public, and what is now being done to try to stop the arsonists. The afternoon session will be devoted to a panel discussion of what needs to be done about this problem. Subjects to be included are: education of the public to the fire menace, enactment of laws to convict arsonists, enforcement of these laws, and co-ordination and support of the entire program.

The second day of the conference will be devoted to workshops for the state delegations. This will give the individual groups working within a particular state to develop an integrated program best suited to the needs of their state.

Arson Resolution of Southern Governors*

Point Clear, Alabama
October 20, 1955

WHEREAS, by resolution of October 4, 1955, the state Forestry Associations of Virginia, North Carolina, Georgia, Florida, Mississippi, Louisiana, and Texas and the Forest Farmers Association Cooperative, the Southern Pulpwood Conservation Association, the Southern Pine Association, the American Turpentine Farmers Cooperative, and the State Foresters of the Southern States in attendance at the 80th annual meeting of The American Forestry Association have called to the attention of the Southern Governors that the sixteen Southern States with 49% of the nation's state and private forest land have

(1) 78% of the nation's forest land not protected from fire;

(2) 89% of the forest land burned; and

(3) 85% of the nation's fires;
NOW THEREFORE BE IT RESOLVED THAT the Southern Governors, in conference here assembled at Point Clear, Alabama, on this 20th day of October, 1955, do recognize the importance of the forestry program in the Southern States and do lend their full encouragement to the efforts of The American Forestry Association and the many responsible Southern Agencies associated with it to ending the tremendous waste caused by forest fires in southern forests on land that supplies raw material to industries which

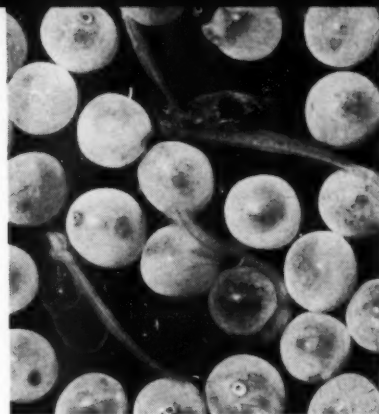
bring in more than 5 billion dollars annually to the Region, and to that end do pledge the full cooperation of the Southern Governors and all appropriate State Agencies and officials to participate in the March, 1956, forestry and woods arson conference to be held in New Orleans under the joint sponsorship of The American Forestry Association and the host Louisiana Forestry Association, and to take other proper steps towards the abatement of forest fires and their tremendous waste of our natural resources and potential wealth.

*Ala., Ark., Del., Fla., Ga., Ky., La., Md., Miss., N. C., Okla., S. C., Tenn., Tex., Va., W. Va.

BIRTH OF THE

RAINBOW

By JACK DERMID



Rainbow trout eggs are pinkish in color and measure about 1/5 inch across

RARE sight for trout fishermen is this enlarged photo of hatching rainbow trout eggs. Few of the vast army of trout anglers have witnessed the hatch, for it would be almost impossible to observe in the wild where it occurs in gravel beds of fast-flowing streams. And it occurs in many trout hatcheries during the winter months when most Waltonians are following other sports.

Close examination of the picture reveals that the fry emerge the best way they can: head first, tail first, or through a slit in the egg case along the back. They do not pop out at once, but struggle out slowly, often stopping for periods of rest before trying again.

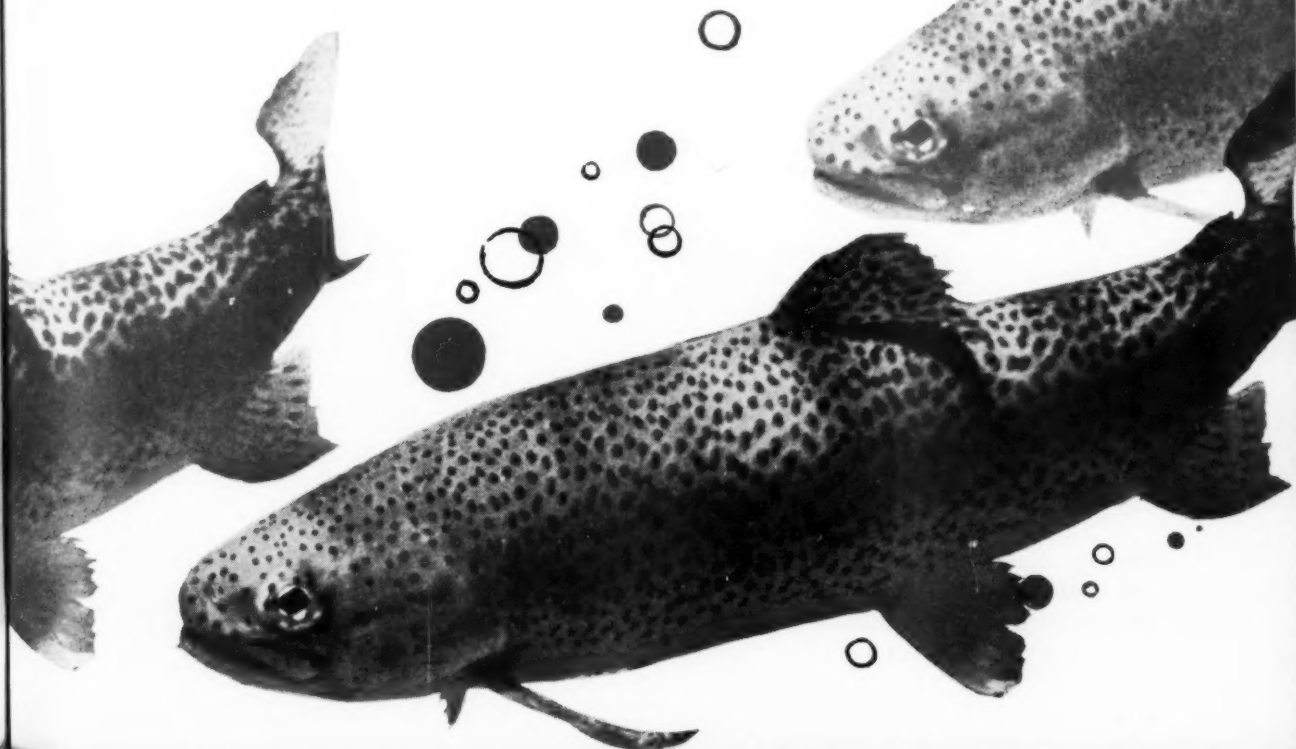
These rainbow eggs, photographed at Waynesville Hatchery, near Waynesville, North Carolina, were about 1/5 inch across and were pinkish or flesh-colored. The eyes of the unhatched fry can be seen through the egg cases and, in some instances, the head and tail curved around the large yolk sac. The newly hatched fry were about 3/4 inch long. It is hard to believe the helpless, potbellied fry will soon grow to become fighting rainbows of rushing waters.

In the wild, most rainbow trout spawn in the spring in contrast to the fall spawning brook and brown trout. To facilitate hatchery operations, fish culturists have developed a fall spawning rainbow through selective breeding. When hatching

occurs in winter, the young trout can be stocked in spring and summer as fingerlings or held over to the following year and stocked as angling-size fish. At the federal hatchery at Wytheville, Virginia, for example, where these eggs were originally obtained, rainbow spawning begins in October and ends about the last of January, with the peak of the spawning season being between November 1 and December 15.

Incubation is dependent upon water temperature, and at 50 degrees F., the eggs hatch in about 30 days. Burdened by the heavy yolk sac, which supplies food in the early days, the fry are sluggish and swim with great difficulty. It is a miracle

(Turn to page 55)





These forests, on a typical New England farm, can produce cash crops for the owner year after year

TREES are my Social Security

By KENNETH ANDERSON

THE Great Plains states, in which I spent many years of my boyhood, were really remarkable for their great lack of trees. Kansas, the Dakotas, and the eastern part of Montana, except for scattered groves and a light growth of trees along the streams, were largely great open spaces, unrelieved by a background of arching limbs and green leaves. Except during the short summer season the pastures were brown and the plowed land either snow covered or monotonously dusty gray. My first trip to the northeastern United States was, accordingly, a real revelation as to how different and more appealing the landscape was, when a large part of it was covered by trees.

After my first look at hard maple, beech and oak stands in New York and Pennsylvania, the advice of Horace Greeley of "Go West, Young Man," fell on deaf ears. What I most wanted after that was rolling

hills, deep wooded valleys, winding brooks and hillsides hidden by deep foliage. Perhaps this was racial—a flowering of the submerged desire of my Scottish forbears, dispossessed by the Enclosure Acts, for the land and trees that had been denied them. I do remember, though, that I determined, then and there, to return to the New York hills and establish a home there.

Several years after my first view of New York State, I managed to return on a permanent basis and help my father rehabilitate an old farm house. There we settled down for the summer and found out how pleasant life could be at the 2000 foot level on one of what the Indians called "The Turtle Mountains," in western New York. Originally a heavy stand of beech, oak, hard maple, and various kinds of "scrub" trees had virtually blanketed our area. The trees fit for saw timber had been nearly cleared out though,

and the ones remaining were being used for firewood faster than they were being replaced, either by nature or under a reforestation plan. Much of the land was marginal, even for use as pasture, and thorn bushes were taking over the neglected fields. It was plain to me that a new growth of trees should be brought in to return the forest income that was needed and to prevent the region from deteriorating into a scrubby wasteland. The expense of reforesting might be high, and the kind of trees needed was unknown to us. What we did realize was that we had to have seedlings at a very low price and that we had to plant trees that could be used for several different purposes. The expansion of the New York State Conservation Division, with its program of low-priced seedlings for Christmas tree or reforestation purposes, and the mounting demand for Christmas trees, pulpwood and lumber was our answer and this has made it possible for us, and for hundreds of thousands of other land owners in the northeastern states to utilize our marginal acres with some assurance of a fair, though not immediate, re-

Properly managed tree farms have proved to be investments of "blue chip" quality. They offer security, and usually appreciation, of capital, and yield long-range dividends.

turn on our initial investment.

It is estimated by the 20th Century Fund that available forest and woodland in the continental United States amounts to about 606 million acres. Approximately 460 million acres, or three fourths of this woodland are capable of producing timber of commercial size and quality. One fourth of the present commercial forest acreage is publicly owned; and of the remaining acreage, one-fourth is in private holdings of over 5,000 acres each, while 4.25 million private owners have small holdings averaging 62 acres each. These private holdings supply about 90 per cent of the timber cut and, accordingly, are increasingly important because of the greater demand for timber products of all kinds. We are planning to have 300 acres set in trees.

Since it takes from fifteen to seventy years, depending on location and kind of trees raised, to produce pulpwood or saw timber, we are concentrating, at present, on Christmas tree production. This should give comparatively short range returns since Scotch pines will be marketable in six years and, by proper planning, a rotation of several different kinds of evergreens worked out that will insure a steady supply of salable trees each fall. The hardwoods can then be left until they are full size and sold when they will bring the best price. In our area we find that the most popular varieties of evergreens, for Christmas trees, are Balsam fir, Eastern redcedar, White spruce, Scotch pine, Norway spruce and Red Pine.

Last year it is estimated that over 30,000,000 Christmas trees were marketed in the United States. In 1953 over 11,000,000 of these trees were imported from Canada. No one knows exactly how many more were cut and taken to market and not sold, but the figure is substantial and might run to perhaps ten per cent of the number actually sold. Even so, however, producing and selling Christmas trees in this country is quite a large business and is bound to increase as our population increases. Christmas tradition and family habits in the United States are so well established that tree growers can probably count on a steady and expanding market. Planning far ahead and making hard and fast sales agreements are two of the most important hurdles to prepare for. Growing the trees is not as simple a problem as might be expected; but, for most growers, it

would seem to be secondary to the marketing problem.

There are now three important and easily classified types of Christmas tree producers in this country. The largest group is composed of farmers who live on their places the year round, put some acreage into trees, establish a rotation so that they have trees to sell each year, produced at a minimum cost and most likely marketed at the maximum local price. Another large group is composed of retired persons who have moved to the country, purchased some land and started raising a few thousand trees. The third consists of railroad companies, large waste land owners or city plungers who buy abandoned farms and plant many thousands of trees, expecting to raise the trees with the least possible attention, throw them on the market at a strategic moment, and take whatever price the big wholesalers will pay for semi-wild trees.

Before deciding to raise Christmas trees it is absolutely essential that the individual sit down and face the economic facts fairly. The location of his Christmas tree site is most important. If it is too accessible, he may lose his best trees by theft, even though most states have laws protecting him from this type of vicious raiding. If his land is exceptionally hilly and rocky he may have to accept a low price for them because of difficulties in cutting and transporting them. If the ground is too fertile the grass and weeds may grow so fast and high that they choke the trees out or the trees may grow too fast and be so coarse or straggly that there is no good market for them. All these things, and many more, confront the would-be Christmas tree producer. It is best for him to consult his County Agent, and so get sound advice, before starting a new enterprise.

Securing and planting Christmas tree seedlings calls for advance planning and means a great deal of hard physical work. In many states the State Conservation Division will supply seedlings for a few dollars per thousand. They must be ordered six months or so in advance of the planting time and will be sent to the buyer by express, collect, in crates that will weigh from fifty to over five hundred pounds, depending on the number of trees ordered.

After the trees have arrived and been "heeled in" the immediate problem is getting them planted before the roots dry out. The sooner

(Turn to page 56)



About the Author

Kenneth Anderson is a part-time tree farmer and a full-time publisher. He has been publisher for the Brookings Institution in Washington, D. C. since, 1929, but has always managed to spend the summers on his tree farm at Hinsdale, New York.

Mr. Anderson was born in Jefferson, Ohio, the son of a Baptist minister, who preached, traveled and farmed in Montana, North Dakota, Iowa, Ohio, Pennsylvania, New York, New Jersey and Florida. He attended Des Moines and Columbia Universities, where he majored in economics, and then spent several years on a farm in North Dakota. Later, Mr. Anderson and his brother Harold homesteaded in Montana for four years. Mr. Anderson was also employed by the Des Moines "News," the "Universal Service" and The Macmillan Company.

Mr. Anderson is married and is the father of two children; a daughter Janet who is majoring in art at Pennsylvania State, and a son Donald, who is working on his Ph.D. in entomology at Cornell University. Another member of Mr. Anderson's family is his brother Maxwell Anderson, the famous playwright.

DURING late August and early September, 1955, the forest and watershed lands of California were subjected to unprecedented losses from 436 wild fires.

In an 18-day period the timber, brush, and grass cover on:

307,113 acres was destroyed by fire.

141,222 acres of timber land and 165,891 acres of valuable watershed covered by woodland grass and brush.

When It Happened

Throughout this entire 18-day period there was no opportunity for the firefighters to get a breath. New fires were starting each day. The number of **NEW FIRES THAT STARTED EACH DAY** was:

Aug. 27 ... 21 fires
 Aug. 28 ... 23
 Aug. 29 ... 7
 Aug. 30 ... 28
 Aug. 31 ... 23
 Sept. 1 ... 28

Sept. 2 ... 33 fires
 Sept. 3 ... 43
 Sept. 4 ... 70
 Sept. 5 ... 26
 Sept. 6 ... 18
 Sept. 7 ... 13
 Sept. 8 ... 15
 Sept. 9 ... 16
 Sept. 10 ... 19
 Sept. 11 ... 29
 Sept. 12 ... 14
 Sept. 13 ... 10

The Way It Happened

The hard-pressed firefighters did a magnificent job in the face of overwhelming odds. Only a few of all

CALIFORNIA A-FLAME

August 27 to September 13, 1955

This article was prepared by the U. S. Forest Service from information obtained by the California Division of Forestry and U. S. Forest Service



these fires which started were able to escape the firefighters' attack and become large or disastrous. The record below attests to the effective work done in the face of the overwhelming odds of critical fire weather and the relative small size of the trained firefighting forces in the state.

172 fires were controlled after burning less than $\frac{1}{4}$ acre.
 130 fires were controlled at $\frac{1}{4}$ to 10 acres.
 76 fires were controlled at 10 acres to 100 acres.
 17 fires were controlled at 100 acres to 300 acres.
 Only 41 fires burned more than 300 acres.

Why It Happened

Precipitation during the winter of 1954-55 was generally below normal. Forested lands particularly in the northwest corner of the state were dangerously dry far earlier than usual. Add to this one of the longest and most critical periods of explosive forest fire conditions in recorded history of the state. Preliminary studies by the U. S. Weather Bureau indicate that the period of critical fire danger prior to and during this siege by fire was unusual in several respects. These critical conditions existed from one end of the state to the other—the period of severe danger was much longer than usual. As a specific example in past years during a normal four-month fire season on the Klamath National Forest fire danger, scientifically measured, has reached the extreme class on not over 6 days per year. In 1955, during the period August 11 to September 5, a period of only five weeks, the fire danger was extreme for 19 days.

During the peak of this critical period a dry lightning storm passed over northern California. Since there was no moisture with this storm, the lightning strikes immediately became fast burning fires.

The Losses

Visualize a 3-foot boardwalk 60,000 miles long — long enough to stretch twice around the world at the equator with some to spare. Or visualize a city with almost 130,000 5-room houses. Either of these projects could be constructed with the

WHAT CAUSED THE FIRES

They were caused by many things as the following record shows:

	Number of Fires
Smokers caused	137
Miscellaneous (including children playing with matches, burning buildings, and vehicles, power lines, etc.)	112
Incendiary (fires deliberated set)	62
Debris Burning	33
Lumbering	13
Campfires	11
Railroads	9
TOTAL fires caused by man's carelessness	377
In addition dry lightning storms set	59

WHAT PUT THEM OUT

A tremendous force of men and machines was mobilized to take part in this battle against flames. Look at the record.

	Fire-fighters	Bull-dozers	Tank Trucks	Aircraft
Employed by U. S. Forest Service and California Division of Forestry	12,700	414	594	48
Volunteers, local fire departments, lumber companies, public utilities, etc.	2,700	110	320	
Military	3,000	5	5	9
TOTAL	18,400	529	919	*57

Every western state furnished trained and experienced firefighting leaders to help in the big battle.

*Including 10 helicopters

timber that was burned in California forests during this 18-day siege of fire. In excess of one billion and a quarter board feet of timber was burned. Foresters estimate that if salvage programs can be carried out promptly that 50% to 75% of the burned timber can be used but there will be an inevitable loss in value.

The ability of all of the burned-over lands to function properly as a watershed has been seriously impaired. Certainly homes, roads, orchard groves and other improvements lying in and below the burned areas will be subjected to an almost inestimable amount of damage from

floods and erosion in the months and years ahead. The extent of this damage will depend on how fast the rains come and how fast a protective cover can be restored on the burned-over lands.

In addition to the loss of these natural resources the fires destroyed or damaged many homes, buildings, and much equipment. The first rough estimates indicate that these losses will approach \$4,000,000.

Another immediate and tangible loss is the emergency expenditures of the firefighting agencies to stop this siege by fire. Present estimates indicate the cost exceeded \$3,610,000.



As "mountains" of pulpwood are required to satisfy the ravenous mills, manufacturers may insure continued maximum production by using chemically-treated hardwood chips

Techniques IN WOOD

By JACK GORDON

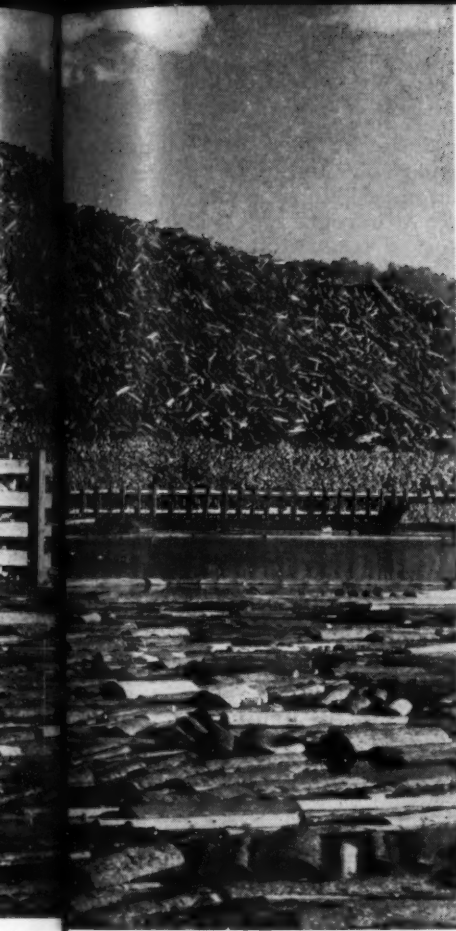
IN recent years, two of the primary objectives of wood and forestry people throughout the world have been to reduce the quantity of wood waste and to increase the utilization of sawmill residues. Because values once lost can never be completely regained, the more important of these objectives is the reduction of waste. These efforts are meeting with considerable success. Large quantities of materials that, a few years ago, were useless waste and had to be discarded have now

become valuable residues that are converted by further processing to salable products. The full worth of these residues is being realized through the development of new processes to convert them to valuable end products.

Fortunately, farseeing foresters, timber operators, research organizations, and engineers are cooperating to utilize these wood residues. Rapid strides are being made toward the reduction of waste. In the forest this is being accomplished by better man-

agement, fire control, insect and disease control, and improved cutting and logging methods. In some places, principally the New England states, portable chippers are starting to be used in the woods to recover quantities of scrap and small branches that were formerly left as waste. Chips so obtained are used in the manufacture of pulp for paper, cardboard, and like products, and in agriculture. Mill waste is being materially reduced by the use of log debarkers. The debarking of logs increases the yield of lumber materially and doubles the amount of clean material that can be converted into chips for pulp manufacture or similar utilization. Reliable authorities have stated that considerable economies in the mill oper-

Much effort is being expended toward reducing waste by utilizing the entire volume of every tree cut, thereby helping to conserve and perpetuate our forest resources



Manufacture of wood chips

10 to 15 years. The operation produces 50,000 board feet per day with nine men, a loader, two trucks, and two tractors in the woods, and a combination unloader and loader at the reload point. The only men not on the gyppo rate are a mechanic and the woods boss. The chief advantage seems to be in increased incentive and teamwork among the men. Increased responsibility of the individual employees reduces the need for supervision. Overhead is cut and efficiency is increased. More production per machine, rather than more production per man, is secured. The big saving comes, therefore, in cost per hour of machine operation and in eliminating straw bosses. Average earnings for the men run from \$425 to \$525 per month, which is more than they would earn on an hourly basis. The reduced cutting cycle allows easy control of disease and insect infestation and keeps the forest in a clean and healthy condition. The net over-all result is good forestry, good logging, protection, high earnings of the crew, high efficiency, and, consequently, an increased conservation and a reduction of waste.

The so-called area or patch logging method now practiced in most of the Douglasfir region and on some spruce forests, while considerably

Methods of Utilizing Residues

As we mentioned previously, the approaches that will contribute most to the improvement of the timber supply situation are those that channel residues into products for which lumber is now required. These products include: plywood, hardboard, softboard, chipboard, glued panel stock, and laminates.

While plywood greatly reduces construction labor, it can be considered as a utilization measure only in that less waste is produced in peeling veneer than in sawing lumber. However, new techniques in the industry are contributing to greater conservation and economy. These include the use of improved gluing techniques, peeling to smaller cores, the use of a wider range of wood species, better patching methods, and the use of smaller logs.

Hardboard, on the other hand, is produced from materials unusable for sawed lumber. Until recently, hardboard production in this country was controlled by one company. This company's basic patents have now run out and numerous new producers and new processes are coming into the field. The Masonite process produces its pulp by exploding the wood fibers in the form of chips from high-pressure steam chests, while the newer processes utilize a milk cook to soften the chips, followed by mechanical defibration. Most of these processes form the boards by wet-felting, just as a paper sheet is formed. The boards are trimmed, placed on screens, and loaded into multiple-opening presses where the water is squeezed out and curing temperature and pressure are applied. The boards are then trimmed to size and humidified to atmospheric conditions. If a board smooth on both sides is desired, it is necessary to dry the wet lap before pressing.

In the so-called semi-dry process, the pulp is blown from the defibrators to a dry-felting machine by superheated steam. This moist lap is partially compacted by passing through squeeze rolls before drying and pressing.

All except one of these boards use a small percentage of resin binder for strength and petroleum wax to add moisture resistance. The one exception is a process operated principally on Douglasfir residues including bark. These properties are imported to boards made by this

(Turn to page 63)

UTILIZATION

ation are obtained by efficient log debarking.

Reduction of Waste

Waste in the woods is being attacked through improved silviculture and improved logging methods. In the past, good silviculture and economical logging have not always been compatible. Improved logging methods are changing this situation rapidly. For example, one contract logger in Montana has recently increased production and reduced costs by using highly mobile equipment and a gyppo pay scale. High risk trees are logged on a light cutting basis. A maximum of 25 percent of the standing volume is logged at any one time, thus reducing the normal 40-year cutting cycle to a matter of

more expensive in the original opening up of a tract, results not only in the perpetuation of the forests, but also reduces loss and waste by virtue of easy access for fire and insect and disease protection.

Mill waste is being reduced by numerous methods. Log debarking gives the sawyer an opportunity to better judge his cut, resulting in a five to seven percent increased lumber yield. Moreover, it reduces operation costs by as much as \$1.00 per 1000 board feet by increasing production rates and reducing maintenance.

Many mills are installing small cut-up plants where slabs and edgings are cut into small dimension stock, toy parts, box shook, broom handles, paper plugs, etc.

By EDWARD C. CRAFTS

1) Continued expansion of the Nation's economy is expected—Any appraisal of future supply and demand for natural resources involves a choice between such basic assumptions as prosperity or depression, population growth or decline, rising or falling standards of living, and peace or war. The Timber Resource Review is geared to a continued rapid rise in population; economic prosperity and higher living standards as

that wood will continue to occupy about the same place that it does now in the national economy and will continue to make up the same proportion of consumption of all physical structure raw materials as at present. Both the lower and upper level estimates indicate substantial increases over 1952 in the amounts of wood which would be consumed.

The lower level estimate for 2000 indicates that demand for industrial

estimates for the year 2000 are 18 and 22 billion cubic feet for the lower and upper level estimates respectively, in contrast to 1952 consumption of some 12 billion cubic feet. These potential demand estimates would require a timber cut of 69 and 95 billion board feet of sawtimber in contrast to the 1952 cut of 49 billion board feet.

3) The United States must rely chiefly on domestic timber resources

21 Highlights of the TRR

An analysis of the nine-volume Timber Resources Review of the Forest Service is neatly packaged in Chapter One on "Timber Resources for America's Future"

reflected in a continued rise in gross national product; and expectations of peace but continued military preparedness.

One of the most fundamental assumptions is that population of the United States will be 210 million in 1975 and 275 million in 2000, as contrasted to an estimated 165 million in 1955. This is an estimated increase of 67 percent for 2000 above that of 1955, but the trend is about the same as prevailed during the first half of the twentieth century.

Gross national product—the total national output of all goods and services—is estimated to increase from 365 billion dollars in 1952 to 630 billion in 1975 and 1,200 billion in 2000. Although this would be an increase of 229 percent from 1952 to 2000, this trend also is about the same as the actual rate of increase over the past 50 years.

2) Potential demand for timber products is strikingly upward—Two sets of estimates of potential demand were developed for both 1975 and 2000. One set—the so-called "lower level" estimates—was derived from a projection of past consumption trends, product by product, as influenced by the basic economic assumptions. These estimates reflect a relative decrease in the use of wood, declining per capita consumption, and an increase in real price. The other set—the "upper level" estimates—is based on the assumption

wood (excluding fuelwood) would be 67 percent greater than 1952 consumption. But even with this large absolute increase there would be a decline in annual consumption per capita from 65 to 62 cubic feet.

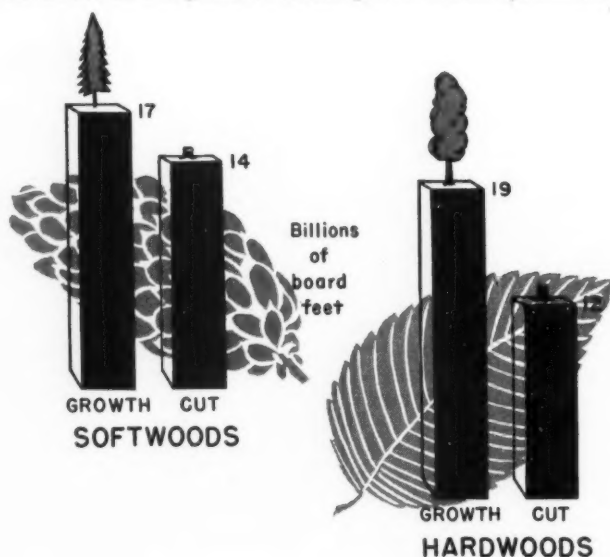
The upper level estimate for 2000 indicates that demand for industrial wood would be 105 percent above 1952 consumption. This would mean a per capita increase from 65 to 76 cubic feet.

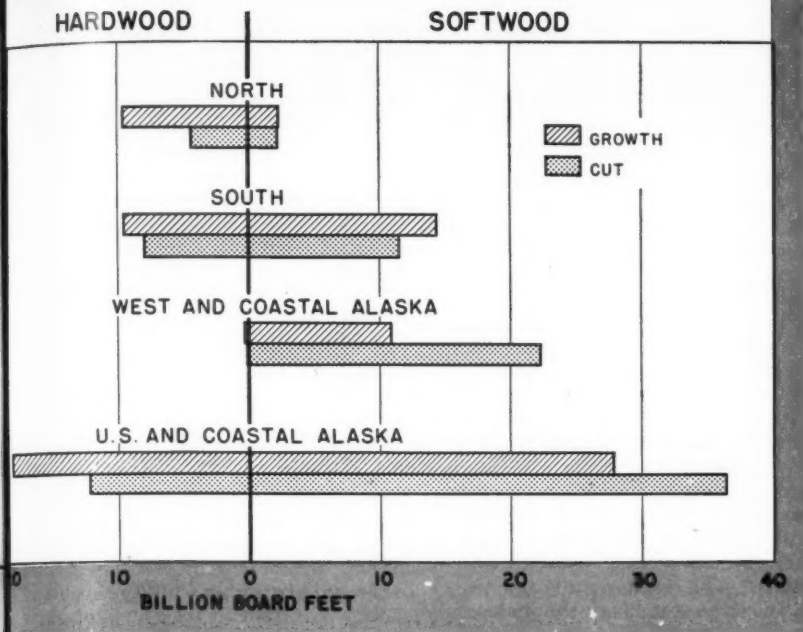
In actual figures potential demand

—with which it is fairly well endowed, compared to other nations—

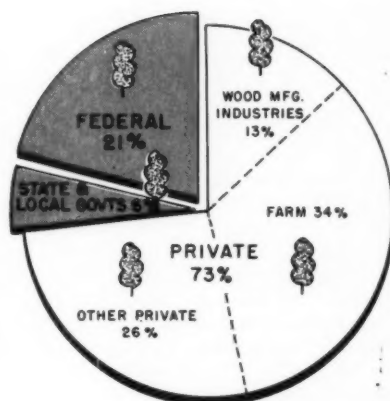
The United States, including all of Alaska, controls 8 percent of the forested area of the world and 15 percent of the timber under exploitation. Although the area is less than that of some nations, the timber volume is greater than that of most. Canada, for example, has more forest area but less timber than the United States, including Alaska. There are about 4 acres of forest

Sawtimber cut and growth in eastern part of United States—1952



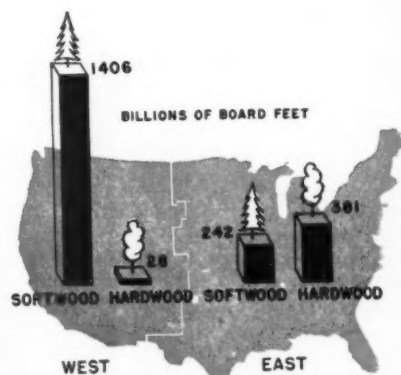


Comparison of net annual sawtimber growth and timber cut, 1952



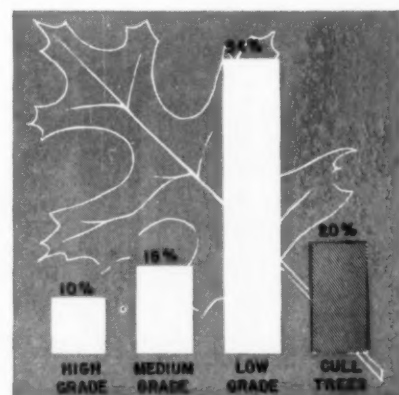
Includes Coastal Alaska

Commercial forest land owners in U.S.



West, includes Coastal Alaska

Sawtimber volume—80 percent softwood



Log quality in eastern hardwood stands

land per capita in the United States, about 9 acres per capita in the U.S.S.R., and about 66 acres per capita in Canada.

In terms of the softwood timber resource, the United States has about 14 percent of the area and 20 percent of the timber volume. Although Canada has a greater softwood area, it has about half as much softwood volume as the United States. More than half of the world's softwood forest area and timber volume belongs to the Soviet Bloc of nations.

It is likely that United States imports from Canada will increase but mainly in terms of pulpwood, pulp, or paper. The extent of Canadian resource, the Canadian potential for increased forest growth, the outlook for expansion of the domestic economy of Canada, and the other demands upon Canada for export of her forest products, all point to some increase in United States imports but in amounts insufficient to contribute materially toward satisfying the increased demand in the United States.

4) The Nation has no excess of forest land—Earlier national appraisals of the timber situation have concluded that there is ample forest land to grow needed timber crops in the United States if the land is effectively used. This is no longer clearly apparent. The long-time trend in the Nation's forest land has been distinctly downward as land has been cleared for agriculture, as

highways have been built and as towns have sprung up and urban areas expanded. There has been no great net change in the area of forest land in recent decades despite a small net increase since 1945. In all probability the long-term downward trend will continue due to expected increases in population, further urbanization, continued highway and power developments, and expansion of agriculture. Considering both this trend in land use and the estimates of potential future demand, it is no longer a clear-cut conclusion that there is ample forest land. On the contrary, further significant reductions in the acreage of land devoted to growing trees should in general be avoided or should be made with full realization that such withdrawals may adversely affect future timber supplies.

5) One-fourth of the forest land is poorly stocked or nonstocked —

There are 115 million acres of commercial forest land in the United States which are less than 40 percent stocked. This is about one-fourth of the total commercial forest area, and it includes some 42 million acres which are less than 10 percent stocked. Thus, one-fourth of the forest land is not growing and will not grow timber to anywhere near the productive capacity of the land unless stocking is greatly improved. Moreover, there is a large but undetermined additional acreage which is

40 to 70 percent stocked. These facts mean that the Nation is not making effective use of the land now devoted to forest production.

6) Three-fourths of the forest land is in the East, but two-thirds of the sawtimber volume is in the West—The great bulk of the commercial forest land is in the more heavily populated and industrialized eastern half of the country, with three regions, the Southeast, Lake States, and West Gulf Regions, having 40 percent of the national total. On the other hand, the West, including Coastal Alaska, with only one-fourth of the commercial forest area, has 70 percent of the sawtimber volume. This is due mainly to heavy stands on the 50 million acres of remaining western old-growth timber. Three states, Oregon, California, and Washington, have about half of the Nation's sawtimber. This great difference in the geographical distribution of forest land in contrast to that of standing timber means that ultimately there will be a significant readjustment in forest industries and of timber cut in order to bring them more in harmony with the location

of forest lands and its productive capacity.

7) Total timber volumes about the same as in 1945—Direct comparisons of timber volumes between those reported by the Timber Resource Review and by the appraisal of the timber situation conducted by the Forest Service in 1945 are not possible. In order to be compared, standing timber volumes need to be adjusted to the same standards.

The 1953 sawtimber volume is 1,968 billion board feet (excluding Coastal Alaska), which is 2 percent below the adjusted 1945 volume. Sawtimber comparisons show that eastern softwoods declined 2 percent, eastern hardwoods increased 9 percent, and western species declined 5 percent. The 1953 volume of growing stock of 498 billion cubic feet is 2 percent above the adjusted 1945 volume. The most significant features of these trends are the increase in eastern hardwoods and the small decrease in eastern softwoods. The latter should be substantially increasing if future potential demands are to be met.

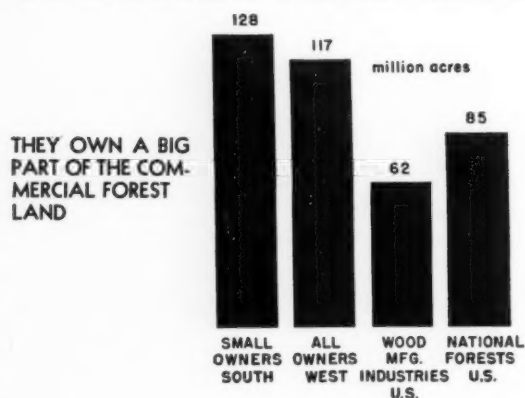
8) Heavy reliance placed on small

group of species—Douglas-fir and ponderosa pine account for 37 percent of the sawtimber volume; southern yellow pines and the oaks for 45 percent of the sawtimber growth; and Douglas-fir and southern yellow pines for 48 percent of the cut. Thus, it is evident that heavy reliance is placed on a small group of species although they vary in importance depending upon whether volume, growth, or cut is the criterion.

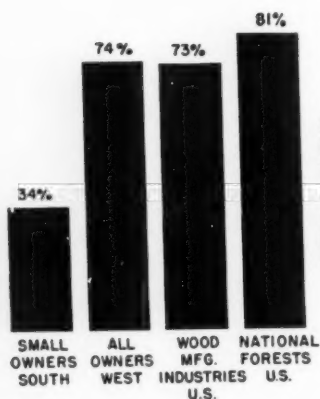
Western true firs and western hemlock are important in terms of sawtimber volume, accounting for 17 percent of the total, but are relatively unimportant at the present time in terms of growth and cut.

9) Timber quality is declining—There is much evidence that standing timber is declining in quality; 10 percent of total timber volume is in cull trees; two-thirds of eastern hardwood sawtimber would probably classify as Grade 3 logs; one-fourth of eastern softwood sawtimber is in the smallest sawtimber diameter class; preferred species or types are gradually being replaced in many areas; and the proportion of total timber volumes in the larger trees is

The small landownerships in the South are the nub of the cutover land problems in the United States today

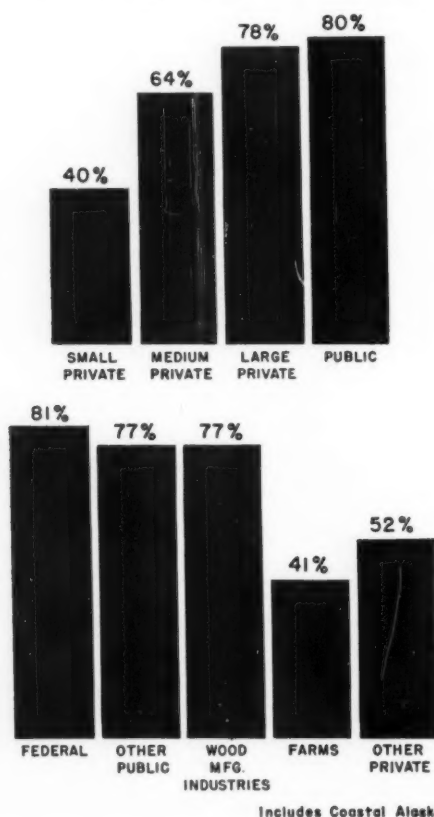


THEY OWN A BIG PART OF THE COMMERCIAL FOREST LAND



ONLY A SMALL PROPORTION OF THEIR RECENTLY CUTOVER LAND IS AS PRODUCTIVE AS MIGHT REASONABLY BE EXPECTED

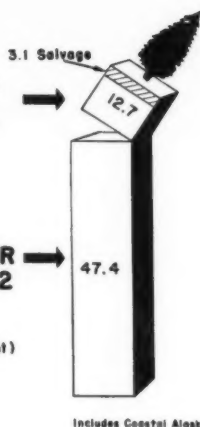
Percent of recently cutover lands on which productivity is as high as might be expected today



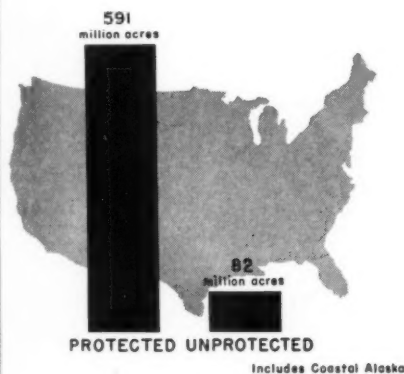
MORTALITY OF SAWTIMBER IN 1952

NET SAWTIMBER GROWTH IN 1952

(In billions of board feet)



Destructive forces reap a big harvest



Forest land under fire protection 1952

decreasing. This decline in timber quality is an undesirable trend although not yet a vital factor nationally.

Despite the technological advances which offset in part the need for quality, it is believed that declining quality will become more, instead of less, of a problem during the next several decades.

10) Timber growth is increasing—

One of the most favorable factors in the timber situation is that growth is increasing. On a national basis, sawtimber growth was nearly 9 percent more in 1952 than the adjusted growth in 1944. Eastern softwood sawtimber growth is estimated to be 12 percent greater than in 1944 and hardwoods 15 percent greater. One-half of all sawtimber growth occurs in the South, with nearly one-third of the total in southern yellow pine.

In the West, sawtimber growth decreased 3 percent between 1944 and 1952. As old-growth areas in the West are cut and more second-growth stands reach measurable size, western growth should substantially increase.

11) Most eastern species now have favorable growth-cut ratios—Over-all growth-cut comparisons tend to be misleading because they may conceal the often quite different hardwood and softwood comparisons. Likewise, over-all comparisons include the growth-cut situation in the West which is distorted by the large amounts of residual old-growth. Furthermore, balances between growth and cut have little meaning unless the inventory is large enough to meet future potential demands.

However, it is significant that eastern softwood sawtimber growth was 20 percent greater than cut in 1952; and hardwood sawtimber growth was 57 percent greater than cut. The favorable softwood growth-cut ratio was brought about as much by a 16-percent reduction in cut as by a 12-percent increase in growth. Most eastern species now have favorable growth-cut sawtimber ratios, although they continue unfavorable for a few preferred species. In the West, the ratio of growth to cut was less than in 1945 due to a decrease in growth and an increase in cut.

12) One-fourth of timber cut not utilized—Of the timber cut in 1952, one cubic foot out of every four was not utilized. Unused plant residues and logging residues were about equal in volume and totaled nearly 3 billion cubic feet. One-third of the timber cut for lumber was not used, either for fuel or any other purpose. On the other hand, only 4 percent of the timber cut for pulpwood was not utilized. The best utilization was found in the North (82 percent of the cut was used); the West (74 percent used) and the South (72 per-

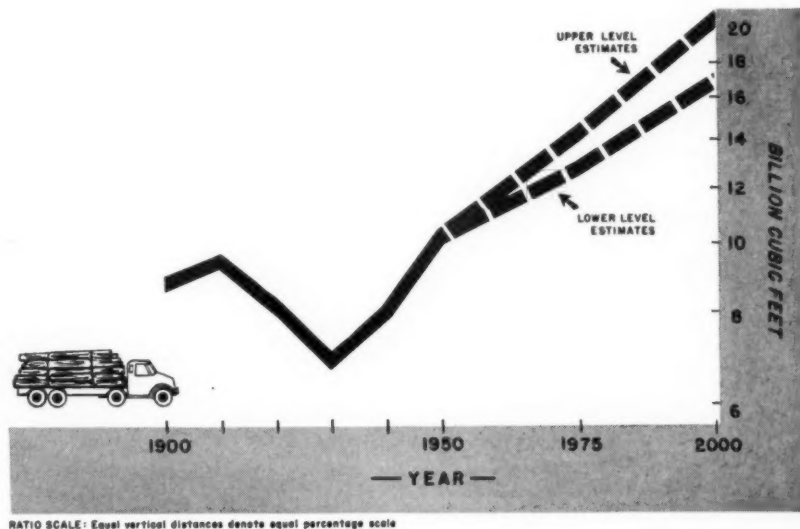
cent used) show lesser degrees of utilization.

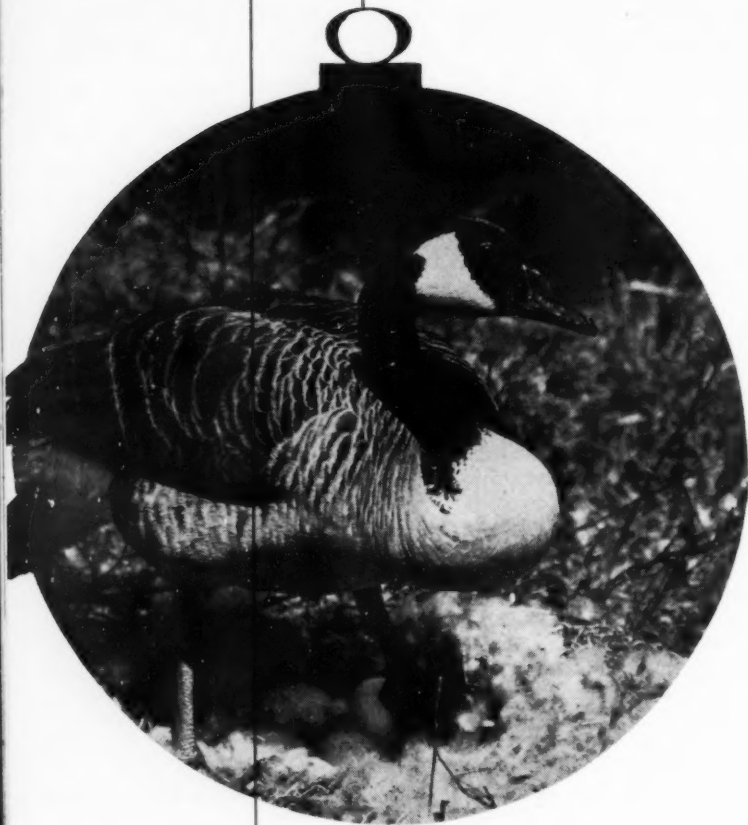
Logging and plant residues can, of course, never be completely eliminated. However, reduction of unused residues is one effective way of making available timber supplies go farther. About 75 percent of the total timber cut is for sawlogs, and the proportion of timber cut which is unutilized is higher for sawlogs than for any other major product. Here is where the greatest opportunity lies for supplementing timber supplies by closer utilization.

13) Destructive agents, principally insects and disease, take extraordinary toll—If it were not for the effect of destructive agents, sawtimber growth in 1952, instead of about equaling timber cut, would have exceeded it by 25 percent. Insects, disease, fire, and other destructive agents killed nearly 13 billion board feet of sawtimber in that year—an amount equal to one-fourth the growth. Of this, about 3 billion board feet were salvaged. The much larger growth impact—which includes not only 1952 mortality but also growth losses in 1952 and subsequent years resulting from 1952 damage—was about 44 billion board feet.

Insects killed seven times as much sawtimber as did fire in 1952 and disease three times as much. In terms of growth impact, disease outranked both insects and fire by more than two to one. The much greater effect of insects and disease in contrast to fire is doubtless due to the greater progress made in fire prevention and control. If the toll of insects and dis-

(Turn to page 46)





THE GOOSE HANGS HIGH

By CLEVELAND van DRESSER

The "honk" of the Canada goose may become a familiar sound again, as areas are now being created that will appeal to this "particular" bird



Programs recently started by the U. S. Fish and Wildlife Service and game departments of several northern states are aimed at increasing the nation's supply of Canada geese. More of these great game birds produced in the United States will not only bring rapturous cries from Nimrods, they will do much toward mollifying a justified resentment coming our way from Canada.

Of late, Canadian wildlife officials have been protesting that hunters in the States do most of the goose killing while Canada does all the goose raising—a not unfair appraisal of the situation. A minor flareup occurred last year attended by harsh publicity concerning the ill-famed "firing line" of Horseshoe Lake, Illinois, a well-known goose concentration area. "Sportsmen," so-called, were accused of mowing down Canada geese like pins in a bowling alley.

At the turn of the Century, Canada geese nested in practically all the northern states from New England to the Pacific Coast. The "crop" produced in the United States added appreciably to the continent's overall wild goose population. Since then, drainage, expanded farm projects, vast logging operations, and industrial and urban expansion have so reduced nesting areas that ten years ago hardly a self-respecting Canada goose would consider raising a family south of the International Line.

During the past few years, United States wildlife authorities have become acutely aware of this unbalanced situation and are doing something about it. A two year survey of goose nesting programs now under way in various sections of the country (which I made) is a good "convincer" that the honker has started a comeback in the United States.

Three large and separate jobs confront this comeback. All three must be accomplished if the resurgence of Canada geese is to reach the proportions planned.

1. Wintering areas must be provided to make up for southern marshes, mainly in Louisiana, converted to pasture.

2. "Sustenance" areas must be provided to support the birds on their annual north and south migrations.

3. Vital nesting habitat must be procured and, in a very real sense, "created."

The Fish and Wildlife Service and the several states concerned have already made notable progress in all three categories. Expansion is planned for the immediate future.

Winter habitat is being provided in Florida where geese have never before been seen in numbers. A flock on the Gulf Coast has built up from 6,000 to almost 25,000 in a comparatively short time. In fact, hunting on part of the St. Mark's National Wildlife Refuge, near Tallahassee, was permitted during the 1953-54 season for the first time in history. Another flock is being established and built up along the lower east coast of the state.

Widespread drainage has been curtailed in the Louisiana marshes, and alarmed bayou sportsmen are plugging for regeneration of wetlands already sacrificed.

The flyway situation is improving, too. Refuge areas now support far more geese than they did as recently as ten years ago. This has been accomplished mainly by introduction of grain crops grown expressly for the birds. In fact, this newly acquired facet of waterfowl management has resulted in the establishment of a brand new flyway along the TVA valley from Kentucky to Alabama.

Congress even got into the act in 1954 by passing the "Grasslands Water Bill," which authorizes development and water supply for waterfowl management in the Central Valley of California. This area is a major flyway and wintering headquarters along the Pacific Coast. Congressional action is coming none too soon, for waterfowl are having



The original nesting flock must be captive, and then pinioned so they cannot fly

a rough time of it in California because of lack of food and water.

Important as are wintering and flyway areas, they are useless unless they have some geese to support. Game management officials have felt for some time that the United States should do its share of producing Canada geese. Efforts to get this country back into the production department have made notable progress.

The first serious attempt to re-establish nesting Canada geese in the United States took place in 1936 when the Fish and Wildlife Service tried to persuade some of the birds to make the Seney Refuge their summer home. Seney is in the Upper Peninsula of Michigan and compris-

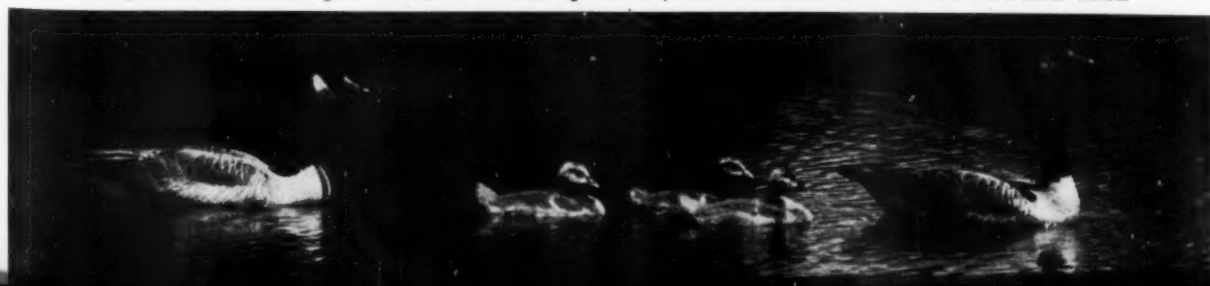
es 96,000 acres of cutover woodlands which have been diked to create ponds and marshes.

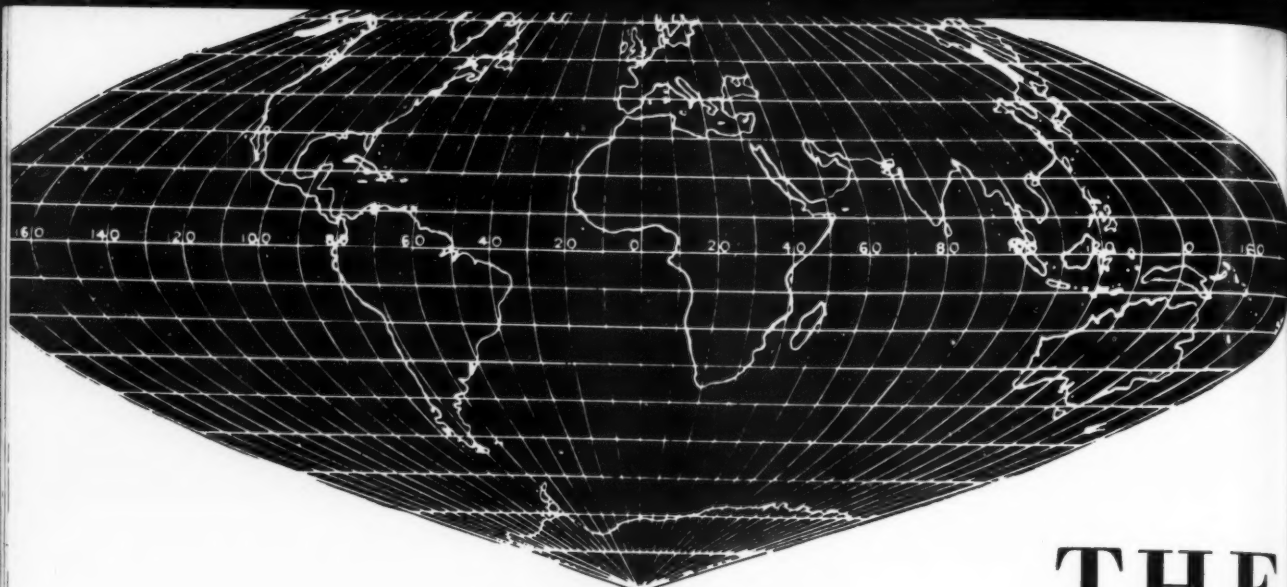
When the nesting program first started, the wildlife technicians in charge of it didn't know too much about what they were attempting, and a lot of mistakes were made. Persuading Canadas to set up house-keeping at Seney wasn't easy. The birds are tradition bound, and will return to their original nesting grounds with the same singleness of purpose as spawning salmon.

The original flock at Seney was almost wiped out several times, but finally the birds accepted the new idea. Strangely, C. S. Johnson, first manager at Seney, and later, Cordia

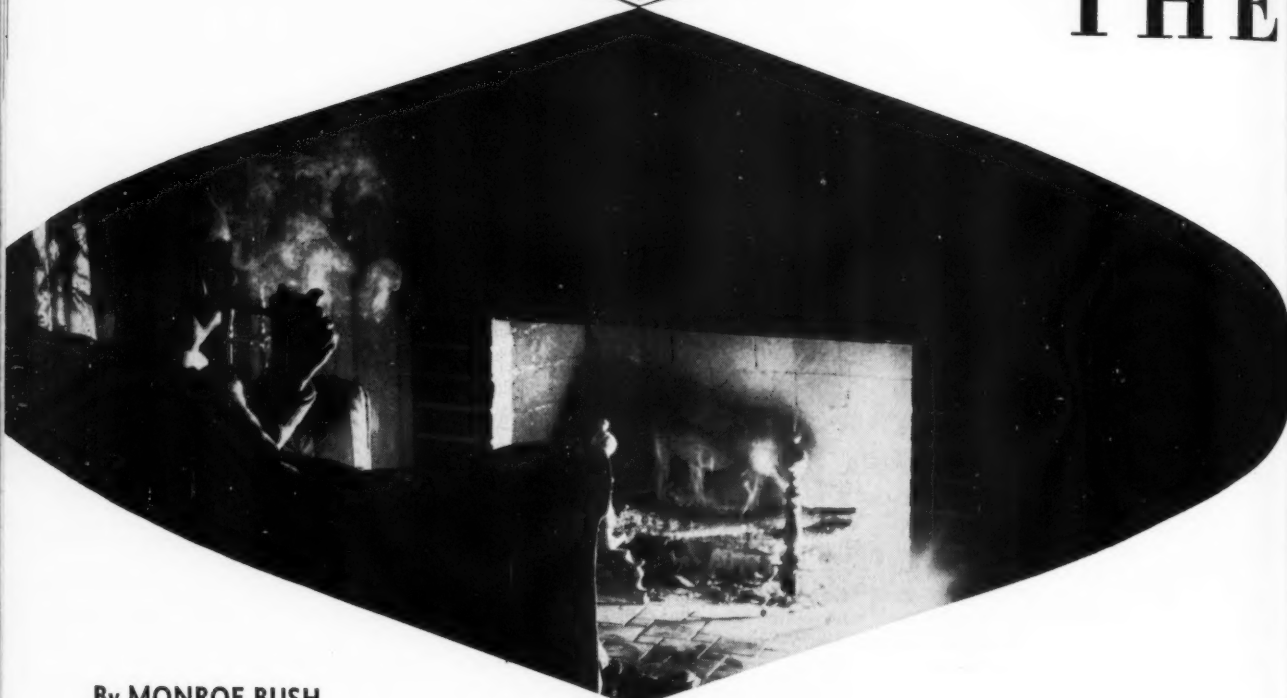
(Turn to page 59)

For protection, Canadas prefer small islands in open water, and low brush that doesn't obstruct their vision





THE



By MONROE BUSH



WE LIVE in the midst of drama more enduring than politics, more far-reaching than war, yet drama as gentle as the morning breeze in marsh grass. This is the drama of the budding sycamore, the bee hive, and the hydrologic cycle, and the Sargasso Sea, the lemmings, and the living soil. It is the drama of a natural world whose mysteries we have scarcely acknowledged, whose high adventure is our's to share.

This earth is an exciting place. Though we find little satisfaction in man's fabricated world, the earth is an abundant satisfier which can refresh and dignify us, and provide

explored the floor of the deep sea and the roof of the high sky. We arranged to spend our lives of quiet desperation in considerable comfort.

These were incredible pressures upon men to assume an apparent mastery of nature. We should not blame either our fathers or ourselves, especially since there is no opportunity in blame. The lie—men, the masters of nature—has and is being lived by. Neither falling water tables nor rising cancer rates disheartens the majority of us. We have become accustomed to our pose.

The ability to alter has been fantastically confused with the ability

Perhaps the children have suffered most dearly. The lonely paths in the tall woods are replaced by sidewalks, the sunset by neon, the huge grey mountains by fenced yards. They have no chance to talk with the squirrels.

We see the earth as something to be used, when in truth it is a cathedral in which men should keep a certain silence, and take care what they do. We forget that the entire biota of flora and fauna are inseparable aspects of the miracle of life. While the nature and function of each is wholly unique, all are tied in an interdependent unity. The fact that men are superior by nature

THE EARTH IS OUR HOME

a contentment beyond our wild dreams. Its seeming failure to do so is our own failure, the result of a faith that we are earth's masters. We have fed on a history of the exploitation of the earth by men, when in truth men have only exploited themselves.

Whenever a species of bird becomes extinct, whenever a field is stripped naked of its topsoil, whenever a vein of ore is mined out, whenever a forest is ravaged, we are the poorer for it. That is, our human species is the poorer, for we have stolen from the future on which our children's children will depend.

We have stolen from the future, and robbed ourselves of present happiness the happy contentment of admitting that we are a part of earth-life, of discovering the dignity of being merely human in contrast to the illusion that we are masters.

This lie of mastery, this lie of history, came to us easily. Our era dawned in the late 15th and early 16th centuries, when the Great Explorers returned from "behind the beyond" bringing new worlds and new wealth. It was the beginning of vast re-organizations, society being torn loose from old superstitions only to be bound by new ones. In time we became literate, efficient and mechanized—that is, the so-called fortunate among us did. We ex-

plored the floor of the deep sea and the roof of the high sky. We arranged to spend our lives of quiet desperation in considerable comfort. These were incredible pressures upon men to assume an apparent mastery of nature. We should not blame either our fathers or ourselves, especially since there is no opportunity in blame. The lie—men, the masters of nature—has and is being lived by. Neither falling water tables nor rising cancer rates disheartens the majority of us. We have become accustomed to our pose.

The ability to alter has been fantastically confused with the ability to control—here is the crux of our difficulty. Men may build jetties to alter the sea's action on a shore, but men cannot control the tide. Men may develop hybrid corn, but they cannot manufacture seed. Men may produce rain from reluctant clouds, but they cannot create broad rivers of wind to roam the world.

Yet having presumed the ability to control, men shouldered the burden of managing nature. Not only was this a pre-doomed failure, but it isolated us from the earth to which we belong. Having lifted ourselves by the bootstraps of scientific device above the natural world, we had no choice then but to surround ourselves with another, man-made world. This new environment was metallic, crowded and unsympathetic. It replaced the morning bird-song with the morning paper; it replaced the long walk through the snow to the barn with fifty lurching, screeching minutes on the commuters' line. This new environment denied mothers the privileged work of caring for large families, so that now in middle age there is little for them but clubs and causes. It denied men the privilege of working with their hands, of building from sticks and stones, and of planting, so that now they write letters to one another, hold conferences, and cheat and argue to amuse themselves.

and function to animals, and animals similarly superior to plants, does not make one independent of the other, or master of the other.

Remember that the soil could no more survive without the sustenance that life gives it than life could survive without the nourishment and energy locked in the soil. The smallest thing affects the largest. Just as you can loosen one tiny pebble and cause a mountain to crash away in avalanche, so every potato that is dug for food, every aspiring fir that is felled in the forest, every sparrow starving in the snow, has its repercussions throughout the world, and forever. Though an effect may be too slight to measure, or to comprehend, the reality of its influence is no less certain.

Yet this unity of high and low, of men and earth and all that lies between, escapes us. And so long as we remain ignorant of it both in knowledge and in practice, we face an impossible task to discover the earth, and to receive its satisfactions.

When, on the other hand, we gladly rejoin the earth's company of living things, not as masters but as a willing and grateful part of the earth, the rewards will abound like manna. Yet this rejoining the earth is no tourist's curious glance, no mere two nights in a state park. I speak, instead, of an utterly fresh orientation for life, one in which the flower no longer denies the branch, or the branch the root—an orientation that assumes that there is one miracle of life, manifest in the various forms of trees and beasts, and men.

(Turn to page 58)

Throughout the centuries of human existence, man has considered exploitation of the earth his prerogative, but has failed to realize, or accept, the interdependent unity of all forms of life

International distributor delivers...

500 TD-24's


For pioneering and road building in the rugged northwest

Howard-Cooper Corporation, one of International's 31 Western area distributors, have just delivered their 500th TD-24!

You see this big 200 bhp crawler already at work for Wooley Logging Company, Drain, Oregon.

In rough, tough, Pacific Coast, big-scale logging, mining, and earthmoving, profitable production depends upon positive load-control, up-grade or down. *The TD-24 is the only tractor built that has planet-power steering—which gives you con-*

stant load control on both tracks when turning. That's why the TD-24 out-produces the others so decisively, with dozer, arch, or scraper! Another big TD-24 advantage is its built-for-the-West construction. Records, on fleet after fleet, prove that TD-24's stand up under the toughest conditions—and consistently cost less for maintenance than any other make on tracks! TD-24 high-altitude performance is a big advantage, too—so is its seconds-fast, cold-weather starting and operating ease!



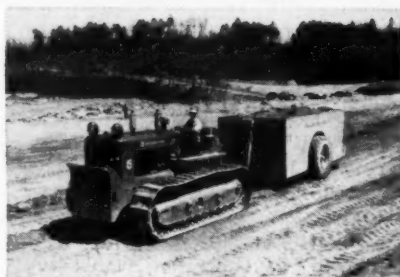
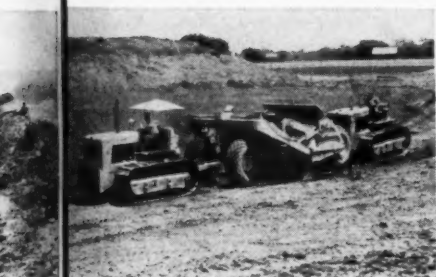
Oregon's 500th TD-24 is already at work. Here, it clears trees and stumps for a new, main truck-haul road near Brush Creek. "I like its torque converter," says Operator Dean Russum. "You get more power without track slippage and you no longer rough up the machine with shock loads."



TD-24's

6 for A. J. Orlando on Massachusetts Turnpike—Most of the tractor work on this Whiteside (N.Y.) contractor's 4.89-mile, 2,500,000-yard, \$3,340,000 section of the Massachusetts Turnpike is being done by TD-24's. One pushing 3 scrapers accounts for 4,500 pay yards every 10 hours (scrapers on 1,500-ft. one-way hauls). Others pull rippers, level fills, etc.

If you're in the market for a big tractor, you owe it to yourself to check the leader...the International TD-24. Five-hundred owners in just one area have proved it their "Best Buy." If it can so successfully and so profitably lick the tough rock, cold weather, and mountain grades of Oregon, it can successfully and profitably lick your high-cost jobs, too! Let us prove its advantages with a demonstration. Call to arrange time and place.



4's PAY OFF ACROSS THE COUNTRY

work on
r's 4.89-
section
is being
scrapers
every 10
one-way
fills, etc.

6 for J. D. Armstrong on Kansas Turnpike—Of their 9 TD-24's, this Ames (Iowa) contractor reports all have run 5,000 hours or more before needing any repair work. Six on 1.7-mile, million-yard Turnpike section near Emporia, are towing 50-ton rollers, pulling and push-loading scrapers. On hauls of 700 to 2500 ft., they account for 5,000 pay yds. per day.

2 for J. W. Moorman on Buford Dam, Georgia—These "24's", two of the five now owned by Moorman, push-loaded scrapers or pulled 50-ton rubber-tired rollers, 18 hours every day for 18 months. On compaction, they averaged 180,000 cubic yards weekly for the 200-ft.-high, 1630-ft.-long main dam. Moorman's other TD-24's are used to push-load scrapers, and pull or push belt loaders.

3 stripping overburden for Meyer Bros., Pennsylvania—"Proven crawlers," says Partner George Meyer of his TD-24's. "We've used our 3 for 3 years now. They have good balance plus unmatched push power." Right now, rigs are removing 30 feet of shale and clay to uncover a 30-inch vein of bituminous coal. The 2 TD-24's do 80% of the job; a large shovel, 20%.

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WHEEL TRACTOR
9 Models... 1 to 37 hp



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9 Models... 40 to 200 hp



DIESEL GAS ENGINE
15 Models, 15½ to 200 hp

ALSO: International Drag Loaders... International Scrapers, Bottom-Dump Wagons... and International Superior Pipe-Laying Tractors.

Military Salutes FFA



Dan and Joe pose with Gen. Stokes and color guard



Joe Moore, FFA's star farmer for 1955 and Dan Dunham, newly elected FFA president receive military citation

The United States Army paid tribute to the Future Farmers of America during observance of the first Farm-City Week proclaimed by President Eisenhower

By MARIAN E. FADELEY

“WHEN my grandfather first bought the farm in Tennessee he cut down almost all of the virgin timber to make as much money from the land as fast as he could and, he didn't seem to think about the people coming after him; but I don't approve of that kind of operation,” Joe Moore, America's 1955 Star Farmer told *AMERICAN FORESTS* last month during the military tribute to the Future Farmers of America.

“I've been planting trees on the hilly sections of the farm that aren't suitable for agriculture,” Joe answered when queried about what he was doing to rectify that unfortunate situation. “Pine and poplar were recommended for that part of my land,” Joe continued, “but the soil doesn't seem to be quite right for pine. I've planted about a thousand pines and only 150 of them are still living. But, the poplars are doing just fine, and eventually I expect to harvest a good timber crop.”

Joe Moore, who had recently received the FFA's Star Farmer award, and nationally publicized by *Time* magazine in a feature article, was one of the guests of honor at the United States Army's salute to the

Future Farmers of America, “. . . the modern Minute Men of our supply lines. . .” October 26, at Fort Myer, Virginia, during observance of National Farm-City Week proclaimed by President Eisenhower.

Sharing the ceremonial honors with Joe was Dan Dunham, newly-elected FFA president, who told us, “that for the past five years or so, forest farming has been included on the list of productive enterprises carried on by the vocational high schools under the FFA program, and that FFA also operates a forestry camp in Tennessee.”

Joe and Dan received the military citation for FFA from Major General John H. Stokes, Jr., Commander of the Military District of Washington, D. C., after serving as “reviewing officers” for the retreat parade executed by America's oldest Regular Army infantry regiment, the 3rd “Old Guard” Infantry Regiment, and the United States Army Band.

The FFA citation presented during the ceremony read in part: “The United States Army, represented by the Military District of Washington, proudly pays tribute to the Future

Farmers of America . . . modern Minute Men of our supply lines. Founded in 1928, FFA continues to nurture in rural youth the praiseworthy qualities of agricultural leadership, character, citizenship and patriotism. By offering a healthy stimulus, farm youth have responded to its diversified program in the vital areas of farm mechanics, electrification, soil and water management, dairy farming and farm safety. Today, with an enrolled membership of nearly 400,000 from some 9,000 rural high schools, the Future Farmers of America provide strengthened evidence of continued prosperity of our bountiful land. . . .”

Many FFA members from the surrounding areas were on hand to witness the impressive military ceremony, as were government officials from the Agricultural Education branch of the Department of Health, Education and Welfare, who have been instrumental in promoting the FFA movement. These included Dr. W. T. Spanton, chief of the Agricultural Education branch and national adviser for FFA, Herbert Swanson, assistant chief, and Dr. A. W. Tenney, executive secretary of FFA.



Six foresters and a helper worked two and a half days to extract the sprawling root

"HOW DID THEY DO IT"

That is the question AFA members have been asking ever since the root system of a southern pine was first exhibited at the Jacksonville meeting. It was a mammoth task—even requiring U. S. Air Force assistance

THE twisted, sprawling root system of a southern pine—contrasting sharply with its tall, straight trunk and symmetrical branches above the ground—was on display, and so far as is known for the first time, during the AFA annual meeting in Jacksonville.

The root system laboriously removed from the ground in the Yellow River Forest of the St. Regis Paper Company near Pensacola in Santa Rosa County, was more than ten feet high and 70 feet wide. Although drawings of pine tree root systems are to be found in textbooks, not even the experienced St. Regis foresters who extracted this longleaf pine root system—which was feeding a tree about 10 inches in diameter above the ground—had ever before seen the complete root system.

The great tap root, wider at the ground level than was the tree it supported, extended eight feet into the ground. The lateral roots, some as thick as a man's arm, extend from 30 to 50 feet from the tap root. Thousands of smaller roots and tendrils spring from these laterals.

The theme of the meeting, "Southern Forestry—An Industrial Revolution with Roots," inspired the Exhibits Committee of which Dr. C. M. Kaufman, Director of the School of Forestry of the University of Florida is chairman, to have the root system dug up and sent to the convention hall as the chief display feature. J. R. Wilson of Art Craft Signs here in Pensacola directed the work of mounting the root system on a series of huge plywood panels which were then cut to sizes small enough to be transported.

J. R. McKee, Chief Forester of the St. Regis Woodlands Division in Pensacola, said that six foresters and a helper worked two and a half days to extract the

root system, and three extra helpers were required to load it on a truck.

"The job of extracting the roots of a southern pine undamaged from the clinging soil in which the tree is anchored has seldom been attempted," he said, and estimated that not one person in a thousand of those connected with forestry has ever seen a root system such as this one.

"We could not have succeeded," he continued, "if we hadn't had the help of our forestry friends at Eglin Field. A few weeks ago, as an experiment, we took up a small root system from a tree about four inches in diameter.

"We found that a high pressure hydraulic pump would be needed to loosen and wash away the soil so that the roots could be lifted without breaking. Although a root has bark, it is not like a tree limb. It's brittle and easily snapped.

"So we got in touch with our friends at Eglin Air Force Base, and through Mr. Walker Spence, Chief of Forestry, and Mr. Corbin, Assistant Chief, we had the use of a Pacific pump, the only one in this area, and about a quarter of a mile of hose.

"They even offered to supply foresters to help out, and the tree itself if we wanted to work in the military reservation. However, we had the tree picked out, one about 18 years old, in the Yellow River Forest in Santa Rosa County.

"The pump worked fine, but it was a killing job. Some of the laterals were over 50 feet long, twisted in and out among other roots and rocks. This is the first time I've seen what such a root system really looks like, and it's the last time, I hope, I have to take the whole darn system out of the ground."



CONQUERING KENNETT'S GULLIES

1) This aerial photograph, taken in 1951, shows part of the Kennett smelter-fume area and Shasta Lake

By CHARLES J. KRAEBEL

When the Bureau of Reclamation was trying to prevent erosion debris from clogging Keswick Reservoir, the Forest Service brought forth the results of its Kennett experiment—a reforestation program that retarded erosion on smelter-denuded lands.

2) "Before smelters," in 1905, Kennett area looked like this forested slope, upwind from Kennett and beyond reach of fumes



3) "After smelters," in 1935, when ore was depleted, the smelter a heap of rusting iron, and hills a desert of eroded land



THE destruction of vegetation by smelter fumes has occurred in many parts of the world. Usually, the killing of forest cover surrounding smelters has been only the beginning of events which have proceeded, through fire and decay, to reduce the affected areas to a state of complete denudation. Where the bared lands have been mountainous, and subjected to heavy rainfall, soil loss by erosion has often reached spectacular dimensions.

A noteworthy example is the Kennett area in northern California. Near the present site of Shasta Dam, more than a hundred square miles of rugged mountain terrain, once forest covered, were denuded and severely eroded as a result of the operation of copper smelters a half century ago.

The Kennett story pictured here tells of rehabilitation rather than destruction in the area. It is a story of far-sighted research by one government agency, the Forest Service, that paid off years later when the results were put to use on a big scale through the cooperation of another agency, the Bureau of Reclamation.

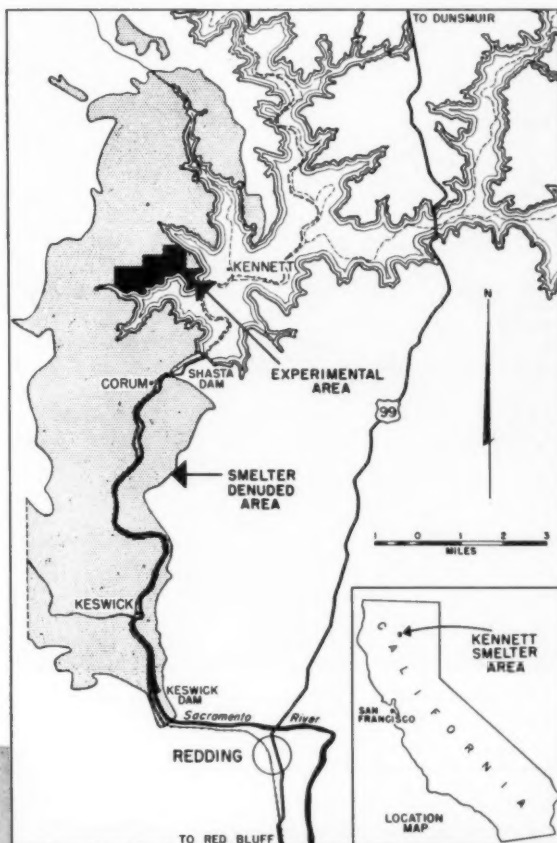
Early experiments by the California Forest and Range Experiment Station of the Forest Service showed that erosion in the barren smelter area could be retarded. More than 10 years later, when the Bureau needed a sure-fire method of keeping erosion debris out of its vitally important Keswick reservoir below Shasta Dam, the method was not only ready but its effectiveness was demonstrated by thrifty pine groves and controlled gullies in the experimental tract.

Mr. Kraebel is Watershed management specialist, California Forest and Range Experiment Station, Forest Service, U. S. Department of Agriculture.

Before Smelters

In 1905 the mountain slopes around the mining town of Kennett were green with a forest of pine, oak, and Douglasfir. Here and there a shrubby undergrowth of whiteleaf manzanita brightened the forest. Streams in the area, fed by an an-

nual rainfall of 60 inches, ran deep and cool in shaded canyons on their way to join the Sacramento River. Squaw Creek and Backbone Creek were rated among the finest steel-head waters in the state. They were also valuable as spawning grounds for salmon that supplied coastal fisheries from Monterey to northern Washington. In the forest deer, quail, and band-tailed pigeons were plentiful. The main line of the Southern Pacific Railroad, paralleling the river, gave access from distant places, and numerous miners' roads and prospectors' trails laced



4) Squaw Creek, 1933: slopes denuded, channel choked with erosion debris and water fouled with leachings



5) This typical gullied slope was chosen in 1936 to test effect of planted pines in controlling erosion



the area. It was, in short, a typical "sportsman's paradise."

The year 1905 also marked the beginning of copper smelting at Kennett. A smelter was started near town, 3 river miles upstream from where Shasta Dam now stands. A mile below the dam site, another smelter was started. Poisonous fumes from the roasting sulphide ores rolled against the mountains in a 12-mile westerly bend of the river, and the forest cover began to die. These fumes merged with those from a third smelter at Keswick, 10 miles downstream from Kennett, which had been in operation for several years. Down-canyon winds carried the fumes far southward until ranchers beyond Redding, which is 5 miles south of Keswick, found their crops and forage injured, and their trees dying.

After Smelters

By 1910 the district was known as

the "Kennett smelter-fume area." It had become a watershed problem area, taking its place in American forest history with similar blighted spots at Ducktown, Tennessee, and Anaconda, Montana.

As the fume-killed forest dried out, occasional fires hastened its disappearance. New plants starting from seed or from stump sprouts were promptly killed by the continuing fumes. The denuded soil was cut away by sheet erosion and gullies that grew larger with each winter's rain. Mudrock flows often blocked the railroad between Keswick and Kennett. Small culverts, adequate for the clear runoff of pre-smelter days, had to be replaced with big box culverts or bridges to handle the debris flows. Under the yearly attack of heavy rains the wasting hills contributed increasingly to the shoaling of the Sacramento River.

After 1912 the smelters operated intermittently until about 1919 when they closed down permanently. But erosion continued on the unprotected slopes.

In the course of a survey of erosion conditions throughout California in 1922 for the State Board of Forestry, E. N. Munns made a special study of the Kennett smelter area. He found 105 square miles of once-forested hills completely denuded and severely eroding, and 134 square miles with cover impaired and erosion active but less severe. From sample plot measurements, he estimated a total soil loss of nearly 35 million cubic yards. In the partially denuded zone, regrowth of vegetation had slowed down the erosion rate, but elsewhere the deepening gullies continued to yield great volumes of debris.

In 1932 another 5 million cubic yards had been sluiced away. On



6) On same slope in 1950 over 80% of trees planted were prospering and formed solid groves of pine



7) Within the planted groves, a blanket of needles 5" deep completely smothered old gullies

8) Fallen pine needles became interlaced and packed into felt-like mat that served to protect site



9) In 1935 gully on left was planted with willows (see insert); gully on the right was not.





10) Foreman Gordon Dawson, above, has directed the building of 120,000 of these gully plugs since 1949



11) An "erosion pavement" of rock fragments, stranded by washing away of soil, now covers some slopes

Munns' "completely denuded" area some vegetation had returned, mostly widely scattered manzanita bushes and an occasional pine tree; but the vegetation was much too sparse to halt the waste of soil in any reasonable time. Plans for damming the Sacramento River in or below the smelter area were still in the talking stage; yet in view of California's growing population, construction appeared inevitable; and if dams were to be built, the massive erosion in the smelter area tributary to them could not be tolerated.

Between 1933 and 1938, the California Forest and Range Experiment Station of the U. S. Forest Service made extensive experimental plantings to determine the feasibility of reforestation and erosion control in the area. Within a few years, it was plain that both reforestation and erosion control could be done successfully. Yet there was no public interest in extending the results into a program of erosion control over the whole area to protect reservoirs not yet built. And the extensive planting of trees for timber production alone could not be justified in view of the still abundant supplies of virgin timber elsewhere in California.

The Need for Planting Completion of Shasta and Kes-

wick Dams in 1949 by the Bureau of Reclamation changed the situation. Two reservoirs were created for water conservation, flood control, and the generation of electric power. Automatically the reservoirs also became catch basins for sediments eroded from the smelter area. Shasta created, in addition, a valued new recreational resource in the form of a huge lake in a mountain setting.

Shasta Dam stands at about the middle of the denuded area, Keswick at its downstream boundary. Each reservoir, therefore, receives about half of the eroded material; but with very different effects. Shasta, with a capacity of four-and-a-half million acre-feet, can easily accommodate the debris until the area becomes naturally stabilized, with little or no effect upon its performance. Keswick, a small "canyon bottom" reservoir of only 24,000 acre-feet, needs its full capacity to regulate the waters released from the powerhouse at Shasta Dam. Every acre-foot of sediment it receives robs Keswick of some of its effectiveness, and its dam cannot be raised because it already backs water up to the tail races of the Shasta powerhouse.

Reforestation of the smelter area adjacent to Shasta reservoir became justifiable on several counts. The big lake gave boating access to many

miles of mountain shoreline, but the raw gullied slopes of the southwest shore held no appeal for camping or picnicking. Tree planting was needed as much to build back an attractive forest cover, as to control erosion.

Then, too, in 1948 Congress added the public domain lands above Shasta Dam to the Shasta National Forest, thereby giving the Forest Service both responsibility and authority for their maintenance. This stewardship imposed another reason for planting the bare area, namely, to stop deterioration of the site for future timber growth.

In the Keswick section, the most urgent need was for erosion control on the slopes above its small but vital reservoir. The Bureau of Reclamation had been alarmed by the large volumes of debris that washed into the reservoir site during construction of the dam. The Bureau, therefore, set up funds in 1949 for control work, and its staff men looked about for ways of doing it.

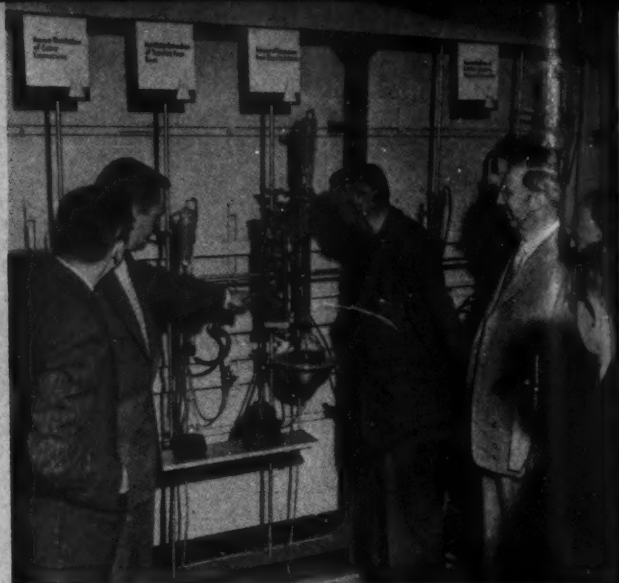
Lessons from the Experiments

In the old experimental tract, they found living evidence that the job could be done. Guided by some of the foresters who had done the original work, they learned what

(Turn to page 42)



Crown Zellerbach's Executive Vice President Harold Zellerbach plants western hemlock at entrance to new research laboratory



Col. William B. Greeley, center, and some officials of Crown Zellerbach Corporation inspect the new research facilities.

Renaissance in Research

As our economy is constantly expanding and the population increasing, the woods industries are developing finer products to keep wood competitive and in common use

WOOD has become the foremost aspect of the civilization of the United States, Col. William B. Greeley said at the September dedication of Crown Zellerbach Corporation's new \$600,000 laboratory at Camas, Washington. And it is "the pulp and paper industry that has done it," Col. Greeley said.

"Research has become the spearhead of progress of our modern industrial society," Vice President Harold L. Zellerbach said at the dedication. "Our tremendous economic and social development owes much to the genius of our people working in laboratories such as this who are constantly discovering new and better ways to do things. . . ." Robert T. Kimberlin is vice president in charge of corporate development for the company. Dr. W. W. Moyer is director of research.

Mr. Kimberlin cited that research, in cooperation with other units of the Crown organization, can "materially assist us in achieving these overall objectives: 1) To produce diversified products of the highest possible quality for sale at the lowest reasonable rates; 2) To maintain the corporation in a strong competitive position; 3) To obtain full utili-

zation of our forest resources; 4) To conduct our operations for the benefit of our stockholders, employees and customers and in a manner which is not only consonant with the public interest but which also makes a positive contribution to economic and social well being.

Flying his usual colors as a "plain dirt forester," Col. Greeley looked back over a 50-year span of experience to recall how he and a few other staunch foresters started the Forest Products Laboratory at Madison, Wisconsin, under Chief Foresters Gifford Pinchot and Henry Solon Graves. In time, the Madison operation became a "kind of reactor," Col. Greeley said. "It seemed to set all kinds of things in motion, big things and little things. . . Things began to happen. . . Men like Dr. Charles H. Herty appeared out of Georgia. . . From those days on the technologies in industry just multiplied and multiplied, and with every new technology it seemed as though we found some new source of material. As I look back, I can see where American forestry at just about that time took a strong turn toward technology, which it has never lost. Technology has been in the lead of our forestry from that time

on, and it is extremely interesting because you can't find anything like it in the history of the world."

When it comes to talking about the future uses of wood or the horizons of the future, Col. Greeley confessed he finds himself in difficulty. "These horizons are so elusive," he said. "You no sooner think you have found that horizon then it seems to slip out of your grasp and you have to work out a new definition or new starting point. I have come to the conclusion that the only horizons of our use of wood in this country will be the horizons fixed by the technologists themselves. . . There is just one suggestion I want to throw out by way of a possible warning that has been in my mind ever since I read the very imposing report of the Stanford Research Institute on the trends in wood consumption, and that is that a part of the job of us in this business, us foresters, us loggers, us mill men, us laboratory technicians, a part of our job is to keep wood in common use in the United States. Keep wood competitive.

"The Stanford report contains some very sober warnings on the markets that would have been lost.

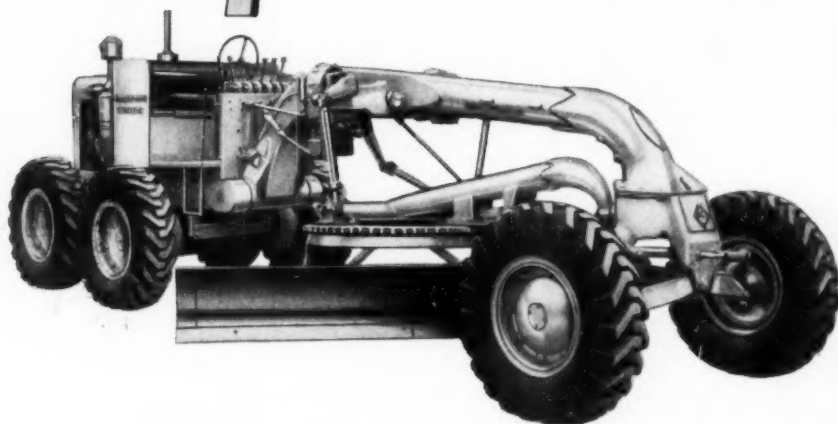
(Turn to page 63)

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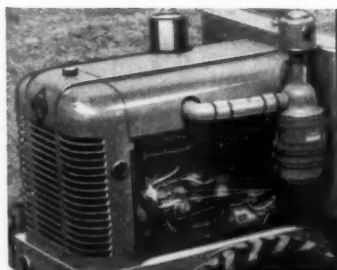
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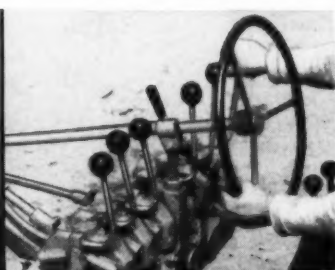
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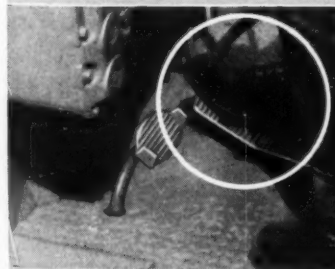
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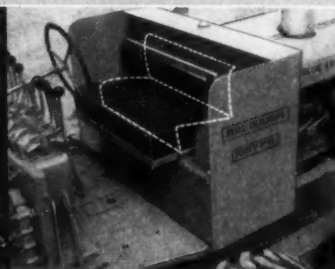
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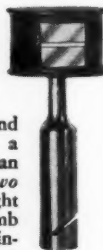
THE RIGHT ANGLE PRISM

This compact instrument consists of a single ground triangular prism and it, therefore, cannot get out of adjustment. A plumb bob can be attached to the hook of the handle.



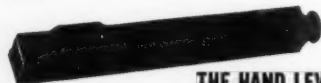
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Conquering Kennett's Gullies

(From page 39)

had been tried, what had succeeded, and what had failed.

These were the results of the tests installed in 1933-38 by the Forest Service:

Beneath groves of pines that had been closely planted as 2-year-old stock 13 years earlier, a carpet of pine needles had literally smothered the gullies.

In many gullies, willow thickets had developed from cuttings planted in 1934. These gullies were being filled with annual accumulations of fallen leaves and soil deposits, and by 1949 erosion had slowed almost to a stop under increasing control of the willows and adjacent planted pines. In a measured plot, for example, a typical willow-planted gully had lost only 42 cubic feet of soil in 15 years, and was filling rapidly. The contiguous unplanted gully had lost 96 cubic feet, and was still getting deeper.

A few gullies had been almost completely healed by a more thorough treatment. These had been plugged with small "check-dams" of cut green brush and packed earth, then staked with live willow cuttings, and surrounded with planted pines.

On several sites oaks were growing thriftily among the pines, the result of sowing acorns in prepared spots.

Bureau men saw that three things combined—planting pines on the slopes with or without an admixture of oaks, planting willows in the gullies, and plugging the gullies with small check-dams made of materials at hand—constituted an effective method of erosion control for the smelter area. It was a method that could be applied quickly and on a large scale in the Keswick area.

Many other things had been tried in the experiments; many had failed, and some were successful. Sowing seed of pines and oaks in seedspots, for example, was successful only when preceded by thorough rodent control. In 1933-34 the U. S. Biological Survey had exterminated the rodents on some 700 acres, including a 100-acre buffer border surrounding the 600 acres of experimental area seeded to pine. Today dense patches of ponderosa and Jeffrey pine and scattered individual trees are growing throughout the area as a result of that cooperative effort.

Three hardwoods that grew well from seed were tanoak, coast live oak, and California black oak. To conserve moisture for the germination of acorns in the bare clay soil, each spot had been covered with a handful of oak-leaf mulch.

Fertilizers in various combinations were tried and found unnecessary. Unfertilized trees gave higher survival, and grew as well as or better than those that were fertilized.

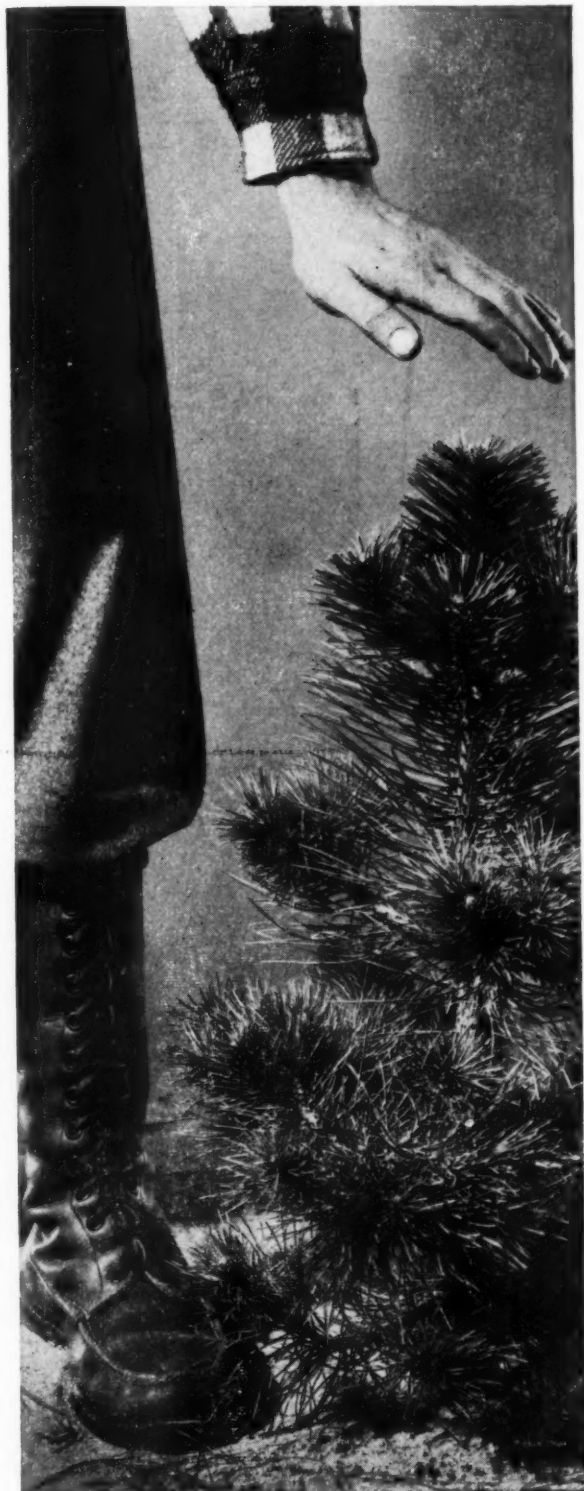
Encasing seed in pellets of various types proved not only very costly but apparently harmful, for germination in ordinary seedspots was 88 percent, in pellet-sown spots 42 percent.

Italian "gradoni" type terraces, which are really trenches to hold surface runoff, were constructed on a 50 percent slope, and planted. By 1949 the terraced area was densely covered with pines and oaks. For the first few years the trees grew slightly faster on the terraces than on unterraced slopes. Later this difference disappeared. The immediate control of erosion afforded by terracing is highly desirable; but compared with the similar effect obtained by less costly gully plugging, large-scale terracing in the Kennett area appears prohibitive in cost.

Ground cover plants of many kinds were tested in different years, but none succeeded. The plants tried included 10 grasses, 3 clovers, barley, oats, and mustard and other herbs. None of these produced even fair plants, and all that grew died before reaching the flowering stage. Shrubs also were tried as seeds or potted plants; but of 10 species put out, only 3 feeble individuals were alive in 1950. Native low-growing shrubs, herbs, and grasses that occurred in the area were generally confined to moist draws, and individuals found away from such favored sites were scarce and depauperate. It was apparent that an extensive ground cover could not be established without more research.

Failure to establish ground cover was not regarded as serious. Although such vegetation was desirable to restore organic matter to the soil, it was clearly not necessary to the success of planted trees, for the pines and oaks thrived without it. Moreover, much of the soil surface between gullies was thickly covered by an "erosion pavement," or mulch of rock particles left stranded by the washing away of surface soil.

knee-high to a hardwood . . .



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The Experiments Pay Off

In the winter of 1949-50, as Keswick Dam neared completion, the Bureau of Reclamation started a vigorous erosion control program in the smelter area above the reservoir. Bureau workers built several miles of access roads on the furrowed slopes. Actual control work started with the building of check dams of dry-laid rock in the lower reaches of gullies where rock was abundant, and gully plugs of cut brush farther up where rock was lacking. These structures were tested almost immediately, for each winter storm that produced runoff left deposits of sedi-

ment behind these check dams.

Planting began in early spring. Live willow cuttings were set in gullies and in the deposits above the check dams, acorns of native oaks were placed in seed spots; and pine seedlings were planted on slopes above Keswick Dam. Above Shasta Dam the Forest Service planted ponderosa and Jeffrey pines to continue the revegetation of that section. Since reforestation rather than erosion control was the primary objective there, gully plugs were built only where they were needed to prevent the most active gullies from undercutting the planted pines.

The cut-brush gully plugs or bar-

riers deserve a special salute for their performance and their peculiar appropriateness in the Kennett area. Because of the flimsy appearance of the plugs, the steepness of the gully gradients, and the heavy rainfall in the region, some engineers had feared the barriers would be sluiced away during severe storms. On the contrary, none has failed.

The stability of the brush plugs is inherent in their construction. Large cut branches of stiff manzanita brush are packed into the gullies with their tops upstream, then trampled down, and their upper ends covered with earth and tamped. The innumerable stem ends and angles, thrusting against the gully banks, develop enough friction to keep the structure from sliding. Runoff water, arriving at such a barrier, is slowed down and broken into trickles instead of a free fall as it filters through the tangled brush. As the sediments drop from the slowed water, they weight and consolidate the structure. Below the barrier the water cannot develop much velocity before it strikes another plug. In a fully checked gully the water is thus stepped down slowly to a main creek or reservoir.

Back in 1934, engineering studies had shown that gully plugs of concrete or lumber would be impractical and uneconomic. Slopes were too steep, foundations unsuitable, and the sites generally inaccessible for the delivery of such materials. At that time, also, the native shrubs were too small and scarce to permit their extensive use for barriers; and consequently only enough plugs of cut brush were built to test their effectiveness. By 1950, the once knee-high manzanita shrubs had become massive bushes 8 to 10 feet high and 10 to 15 feet wide. With this material, Foreman Gordon Dawson of the Bureau, and his field crews, developed the construction of brush barriers into a precise technique.

Altogether, a formidable attack has been made upon the gullies of California's smelter area, mostly by the Bureau of Reclamation in the vital Keswick reservoir section. More than two million pine seedlings supplied by the Forest Service have been planted; 150,400 check dams built, 80 percent of brush, the rest of rock; nearly 300,000 willow cuttings set in gullies; 2 million oak seedspots planted; and nearly 200,000 broadleaf seedlings planted. The work covers about 6,800 acres of the 11,000 acres that must be stabilized in the Keswick watershed.



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The Task Ahead

(From page 7)

plete is that serious shortcomings also revealed by the study (See story on page 24) will soon render our present favorable growth picture "meaningless" unless we succeed in building up a timber inventory of sufficient quality and quantity to meet unprecedented wood demands likely to develop in the next half century or more. That inventory as of today is entirely inadequate to meet these anticipated needs, the report states. Furthermore, even with the best efforts of all of us it will be nip and tuck if we do meet them, the Forest Service tells us.

If growth and drain are nearing a favorable balance, why are we worrying about the future, we have been asked. Due largely to fine management strides on the 40 percent of our commercial forest land managed by the public and major forest industries, the depletion tide is now being reversed. This doesn't mean that public and industry management have arrived at a forestry Utopia because they haven't. Both have much to do and there is now reason to hope that they will do it. But to provide for the wood needs of a population estimated at 275 million by the year 2000, the growth rate must be increased from 70 to 120 percent, the survey shows. And to achieve this goal will require a vastly improved effort on the part of that 60 percent of all commercial forest land in farm and other small woodland ownerships. That effort today leaves much to be desired. The blunt truth is that we haven't as yet made an appreciable dent in the task of bringing some 4,500,000 small woodlot owners into the management fold. And the challenge inherent in this TRR report is that we **MUST** solve this problem in the next two decades if we are to prove worthy of our forestry mission.

Nor is that all. Quality of much new growth is not necessarily of the best or in species needed the most. Big gaps exist in the restocking pattern. Destructive agents—insects, diseases and fire—continue to wreak havoc in our forests. For example, if it had not been for the ravages of destructive agents, sawtimber growth in 1952—instead of about equalling cut—would have exceeded it by 25 percent.

While the growth curve is now proving to our competitors that wood is not only renewable but is actually being renewed, the "iffy" factors divulged by the TRR show in concrete terms that we must all step up our efforts if we are to meet future demands. We must not relax. We must continue to build up management momentum. We must further strengthen the cooperative pattern of forestry endeavor to achieve the big three goals outlined by AFA's program. Furthermore, we must do it much more quickly than we had previously believed to be the case.

The TRR is a challenging report. While its future projections—like those of the Stanford Report—must be regarded as guides based on premises that can be upended by future events—the report makes it abundantly clear that present forestry efforts in this country should be redoubled in the shortest possible time. We believe the TRR will exert a healthy influence on forestry progress in the nation, and we are glad the AFA gave it full support. We also believe that the general reaction of forestry and business to this matter of future demands will be "We can meet them and what's more we will meet them."

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21 Highlights of TRR

(From page 27)

ease could be similarly lessened, a large contribution would have been made toward the growth needed to meet potential future demands.

14) Fifty million acres are plantable—Although planting rates have increased greatly in recent years, and forest plantations in the United States cover about 5 million acres, there is a big job of planting ahead, mainly in the East and mainly on private lands. About 50 million acres, or 10 percent of all commercial forest land in the Nation, needs planting if it is to become productive within a reasonable time. This estimate is conservative in that it does not include areas where it is possible to improve stocking by interplanting or where, by planting promptly after cutting without waiting for natural regeneration, it is possible to reduce the time that lands lie idle. If adequately reforested, the area in need of planting might eventually add about 8 billion board feet annually to timber supplies.

15) Forest condition poorest on small farm and "other" private ownerships, especially in the South—

There is conclusive evidence that the condition of recently cut lands is poorest on the farm and "other" private ownerships. The latter means private ownerships, generally small in size, which are not farm and not forest industry. These two groups of forest holdings involve nearly 4.5 million private owners and account for 60 percent of the Nation's total commercial forest land. For the country as a whole, only about 40 percent of the farm and 50 percent of the "other" private ownerships qualified recently cut lands for the upper productivity class.

Small private holdings, regardless of kind of ownership, clearly showed poorer productivity than large and medium sized properties. Geographically, productivity of recently cut lands is considerably lower in the South than in other parts of the country, and the farm and "other" private ownerships show poorer ratings for the South than for other sections.

Considering location as well as kind and size of ownership, the small private ownerships of the South are conspicuously below the rest of the country in condition of cutover lands. These holdings, numbering 1.8 million, are owned mainly by farmers and the miscellaneous non-forest industry group that makes up the "other" private category. They comprise 128 million acres, or one-fourth of all commercial forest land of the Nation. Two-thirds of the recently cut lands in this group fail to approximate productivity standards reasonably attainable under average current conditions.

16) Forest condition best on public and forest industry ownerships—In contrast to farm and "other" private ownerships, about three-fourths of the recently cut lands owned by public agencies and the forest industries qualified for the upper productivity class. Two-thirds of the land owned by forest industry is in large holdings. There was little difference between public ownerships as a group and forest industry as a group. However, there were appreciable variations between different parts of the country, different forest industries, and different public ownerships. The pulp industry with 84 percent of its recently cut lands qualifying for the upper productivity class exceeded the national forests with 81 percent and the lumber industry with 73 percent.

These findings show that there is little distinction between condition of cutover lands in public ownership as contrasted to those owned by forestry industry. The contrast is between public and forest industry ownerships on the one hand, which comprise about 40 percent of the Nation's commercial forest land and have 75 to 80 percent of cutover lands in the upper productivity class, and the farm and "other" private ownerships on the other hand, which make up 60 percent of the forest land

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(The names of additional people to receive gift-memberships may be put on a separate sheet of paper and sent with this order blank.)

and have about 46 percent of their recent cutovers in the upper class.

17) Inadequate stocking is most significant factor in reducing productivity of recently cut land—Over half of the land cut over since 1947 would have been ruled out of the upper productivity class on account of deficiencies in existing stocking. A considerable portion of this area was restored to the upper class due to reasonable prospects of stocking. The fact remains that understocking is the most important cause of recently cut lands failing to measure up to standard.

18) Improved stocking and control of insects and disease offer best possibilities of increasing timber supplies

—In addition to timber from commercial forest land in the continental United States and Coastal Alaska, there are several possible supplementary sources which need to be placed in proper perspective. In terms of standing timber, there are unknown quantities on reserved but productive forest land and on non-forest land. There are also 180 billion board feet of sawtimber in Interior Alaska, and 37 billion board feet in salvable dead trees in the United States and Coastal Alaska. There are 56 billion cubic feet of sound volume in cull trees available for products not requiring high quality material.

On an annual basis there are 2.2 billion board feet of sawtimber consumed for fuel, some of which might be used for other products, and there are 2.7 billion board feet of sawtimber in the form of unused residues. Net imports from Canada might be increased somewhat above the anticipated level (1.2 million cubic feet) assumed in estimating potential demand.

However, the best possibilities for permanently adding to timber supplies seem not to be any of these but instead (a) reducing the nonsalvaged mortality loss of 10 billion board feet annually—four-fifths of which is due to insects and disease, (b) capturing most of the 8 billion board feet annual sawtimber growth potential from the 50 million plantable acres. (c) improving the stocking on the one-fourth of the commercial forest land of the Nation which is medium or poorly stocked, and (d) obtaining sufficiently prompt and adequate restocking on cutover areas so as to maintain their productivity.

19) The key to the Nation's future

timber supplies lies with the millions of farm and "other" private holdings

—The greatest advancements in forestry, the best conditions on recently cut lands, and over half the Nation's inventory of softwood sawtimber occur on forest industry and public land. The 23,000 forest industry ownerships account for 13 percent of the commercial forest land; public lands, 27 percent.

In contrast, the farm and "other" private ownerships have the poorest cutover conditions, are largest in total area, largest in number of owners, and potentially the largest in total timber volumes. Eighty-five percent of these 4.5 million ownerships are in forest holdings of less than 100 acres, and 50 percent have holdings of less than 30 acres.

Unquestionably, the heart of the forest problem of the United States lies with the 3.4 million farm owners and the miscellaneous group of 1.1 million "other" private ownerships. Although they own mainly very small tracts of forest land, and their principal interests usually are not timber growing, in the aggregate they control well over half of the Nation's commercial timberland, and they must continue to supply a substantial portion of the raw materials for forest industry.

20) Growth and inventory needed to sustain potential demands will be much greater than at present—Comparison of present levels of growth and inventory with how much is needed helps to indicate how easy or difficult it may be to meet future demands on a sustained basis.

Estimates of needed growth in 2000 range from 79 to 105 billion board feet of sawtimber, or from 67 to 122 percent above 1952 levels. The lower estimate is based on a lower level demand which reflects a relative decrease in the use of wood, declining per capita consumption, and an increase in the real price of timber products. The upper estimate assumes that wood will continue to occupy about the same role as at present in the national economy.

By 2000, eastern softwood sawtimber growth would need to increase 90 to 154 percent, eastern hardwoods 15 to 52 percent, and western species 121 to 194 percent, depending on whether needs are geared to lower or upper level estimates of demand.

Considering all species together, the changes needed in standing timber inventory are not nearly so pronounced. Although a slight decrease would be possible and still meet low-



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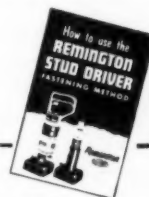
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er level demands, about a one-third increase in sawtimber inventory would be needed to sustain the upper level. The needed increases in inventory of eastern species are relatively greater than the needed growth increases for these species. These are offset in part by allowable decreases in the inventory of western species.

21) Potential demands pose tremendous challenge to American forestry

—A comparison of the growth and inventory that may be expected in the future with what may be needed to sustain future demands is more significant than comparing future needs with current levels. Projected growth and inventory are what might be expected in the future if all demands are met in the meantime, and if current trends in forestry continue.

Projected sawtimber growth in 2000 ranges from 67 to 25 billion board feet, or from 16 to 76 percent below needed growth for the lower and upper levels of demand respectively. By 2000 eastern softwood sawtimber growth would range from 29 percent below needed growth down to negligible amounts, eastern hardwoods from 16 percent above to 58 percent below, and western species from 28 to 61 percent below depending on whether timber cut had been geared to lower or upper level demands in the meantime.

Projected sawtimber inventory in 2000 ranges from 2,002 to 968 billion board feet, or from 6 percent above to 65 percent below needed inventory for the lower and upper levels of demand respectively. Eastern softwood inventory would be seriously affected under either level of demand; but under the impact of meeting upper level demands, the inventory of both eastern and western species would be less than half of needs.

In general, the long-range effect of meeting either level of demand would be about the same. The difference is that the effects would be delayed and less pronounced with respect to the lower level. If upper level estimates of demand are met until the end of the century the Nation would be facing serious wood supply problems before that time, especially in softwood sawtimber. Even hardwood sawtimber would be decreasing. If the lower level estimates prevail, softwood growth by the end of the century would be considerably below that needed to sustain demand.

To fully appreciate the significance of these interpretations, it is essential to bear in mind they are

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The Conservation Chart that was furnished as a supplement to the April issue of American Forests was received enthusiastically by the members. Many members have ordered extra copies to give to camps, schools or individuals. We have a number of copies remaining on a first-come, first-served basis. The price is 50c each postpaid.

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predicated upon a continuation of recent trends in forestry progress. If existing levels of forestry had been assumed and no recognition given to probable intensification, the outlook would be far less favorable.

Forestry is not a short-time proposition. Where this Nation stands in timber supply at the end of the century depends largely on actions taken during the next two decades. Rapid acceleration of recent encouraging forestry trends is vital if the timber resources of the Nation are to be reasonably abundant 50 years hence.

"Mr. Wisconsin"

(From page 3)

in 1949. Long active in AFA affairs, Mr. Everest was elected president in 1951, and served on the board of directors from 1952 until his death. Mr. Lowell Besley, executive director of AFA, said that with Mr. Everest's passing we have lost one of nature's champions.

An outstanding leader in the paper industry, Mr. Everest was one of the key men responsible for the growth of that industry both in his own state and in the nation. Through his foresight and initiative the Marathon Corporation, which he joined in 1909 as general manager, grew from a small firm to one of the great paper and pulp products corporations in North America. His advice was eagerly sought by all members of the industry and at the annual Paper Week, Mr. Everest's analysis of the business year and his predictions for the future were a star attraction.

While striving to improve the paper and pulp industry, Mr. Everest became interested in the Institute of Paper Chemistry at Appleton, Wisconsin, and served as a trustee of that organization from 1929. He was also active in the American Paper and Pulp Association, which he served two terms as president. Mr. E. W. Tinker, Executive Secretary of APPA said of Mr. Everest: "Over the years his vision and courage were a major contributing factor in the growth of the pulp and paper industry and certainly to the organization of the APPA on a sound and stable basis. He will long be remembered as a great industrial statesman whose achievements will remain as a monument to him."

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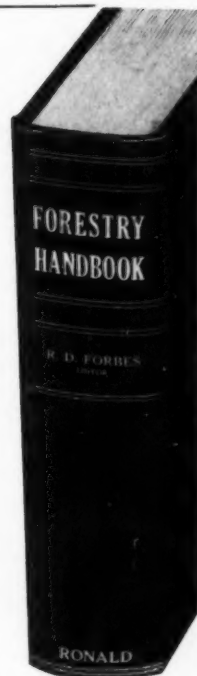
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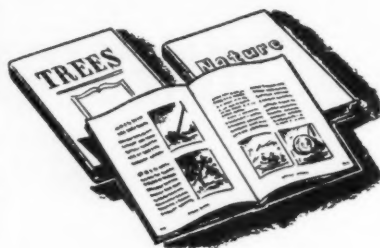
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Reading About CONSERVATION

By **ARTHUR B. MEYER**

HIGHLY developed powers of observation are the hallmark of the naturalist, professional or amateur. When these abilities to see and hear are brought into play on a 30,000 mile trip about North America and are reported with facility the result is a most interesting book. *Wild America*, by Roger Tory Peterson and James Fisher, with illustrations by the former (Houghton Mifflin Co. 434 pp. \$5) is an adventure in nature observation, a fresh and lively report on the marvelous diversity that nature shows on our own continent.

James Fisher is a British naturalist and writer making his first visit here. Peterson is the well-known author of the Field Guide Series and a first rate artist and student of natural history. In this book their talents are combined as they describe a 100-day tour in which Peterson introduces Fisher to the American out-of-doors by plane, station wagon, boat, and foot travel. Starting in Newfoundland, the pair explore the Appalachians, the Everglades, the coral islands of the Dry Tortugas. They go south into the lush cloud forests of Mexico, back up into Arizona's austere land of cactus, cross the Continental Divide and visit the Coro-

nado Islands off the coast of Lower California. From there they tour main points of the Pacific Coast States, from the domain of the California condor through Yosemite to the still beauty of Crater Lake. Far to the North and West their trip culminated in a visit to the Pribilof Islands in the Bearing Sea where the fur seals congregate in their strange colonies.

Both Peterson and Fisher are bird watchers. They keep ticking off the species they observe on some kind of a tally or check list, but this should not discourage any non-bird-watchers from reading the book. It soon becomes apparent that birds to a bird watcher are rather on a parallel with fancy lures to a trout fisherman or skis to a winter sports fan. Everybody seems to feel it necessary to have a special excuse to get outdoors. It is plain from this book that bird watchers probably employ fewer subterfuges than most devotees of nature in the wide open spaces. They frankly admit that they are out to look and listen, to ponder and marvel. More power to them. Each facet of nature leads its explorers right back to the big riddle that is all of nature—its unity and interdependencies. It is only the rank beginners in a field of natural history, or those who look but cannot see, that do not regard their special interest as an approach to a larger interest. The authors watch the birds, but against a background that encompasses sea and desert, forest and swamp, and the whole panorama of living nature.

Peterson and Fisher are both scientists. They are also artists in the field of interpretation and expression, astute observers and capable reporters. The trip they made is one that few of us would have opportunity to duplicate, but most of us would envy. While we accept without too much thought the general statement that America is rich

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in natural resources many of us have only fragmentary first hand knowledge as to the truth of the statement. In *Wild America* there is presented a cross section of the total picture of that wealth. Admittedly it is a review of some of our prouder possessions and major attainments in preservation and is not a review of problem areas in conservation or an assessment of the discouraging aspects of resource management. But it is time now and then to take stock of the good. We Americans scold ourselves continually, and rightly, as to the manner in which we have treated and are treating our natural resources. (Rightly, because even our best efforts will not be enough.) We are also accustomed to having other nations take a dim view of our handling of natural resources. We expect to be regarded as opportunists, out for the quick buck, cashing in on a million years of stored wealth in land and forests, minerals and wildlife. We tell our faults loudly for all to note. Sometimes we might do well to take stock of our not entirely insignificant attainments.

It is refreshing and encouraging, then, to note that Mr. Fisher, after his extensive view of the wild areas of North America, has a kind word to say for us. As he closes the book he observes, "And this is what I have tried to do—to tell of Wild America, and say that never have I seen such wonders or met landlords so worthy of their land. They have had, and still have the power to ravage it; and instead have made it a garden."

The Friendly Forests by Alma Chesnut Moore with illustrations by Matthew Halmenoff (The Viking Press. 96 pp. \$2.50) is a children's book giving general information about forests as a natural resource. It is well organized with ten chapters covering forest history, soil, water, the growth of trees, protecting forests, values and products of forests, how forests reclothe the land, and "How we can help nature."

Outdoor Hazards—Real and Fancied by Mary V. Hood (Macmillan Co. 242 pp. \$3.95) is both interesting and instructive. The author conceived its coverage while working with youth leaders and discovering the interests of lecture groups. Certainly it will prove a valuable book for those without much prior experience who contemplate outdoor living and travel. It should serve to dispel unjustified fears and yet point up the need for caution and knowledge where actual dangers do exist.



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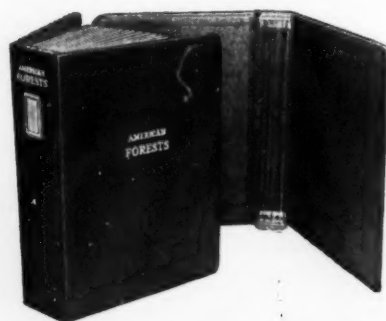
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"How Are My Cedars"

(From page 11)

fabulous pay to him. Maybe he could finish the job by the time he graduated from high school and before he went away from home to enter college to study for the ministry.

But events that hadn't entered into his initial calculations began happening. War came, the Second World War.

By the time he finished high school he had six brothers and one sister in the armed services, along with the husbands of three other sisters. And this sort of record got into the newspapers and made him proud of his family. But his tree-planting project was only half finished.

Even so, when his call came from the local draft board, his mother said, "No excuses, no deferments—understand, Son?" And when his father bobbed his head in agreement, Lake said, "Okay, Mom."

From Lackland Air Base, from Buckley Field, from Italy, and from wherever they sent him, he wrote his mother everyday. His last letter was dated March 17, 1944, and he said: "Soon I will be in combat again. I will have only memories and faith to sustain me. I don't know what the future will be, but I can truthfully say I am not afraid to face it. . . . P. S. How are my cedars?"

The future, from an early hour of March 17th when he wrote his last letter, is recorded in the history of the Air Force Department:

On 17 March 1944, the 459th Bombardment Group participated in a mission flown by the Fifteenth Air Force against Vienna, Austria. Over the target, Lieutenant Allen's plane, "ha Barracha," was hit by flak and seriously disabled. Breaking in two in the air, it struck Lieutenant Baldrige's aircraft (nicknamed "Smoky"). Both planes went down, with no parachutes seen to open.

On his 39th mission, Staff Sergeant James Lake Jameson went down with old "Smoky" only a few hours after he'd asked, "How are my cedars?"

If those cedars had escaped vandalism, they would be fitting monuments to commemorate the life of a brave soldier. But year after year they are mutilated. They have grown too large to be chopped down at the ground and used in resi-

dences, so vandals bring along ladders and cut the tops out of them.

As Christmas approaches, the cedars suffer most. For decorative purposes, strangers, tourists, and neighbors break off the prettiest branches, never seeming to realize that they are defacing and destroying ornamental trees that were made sacred by hard work, sacrifice and devotion.

Rainbow Trout

(From page 17)

any could survive the rigors of life in a trout stream. But the yolk sac is gradually absorbed, the fry begin feeding, and soon grow into agile fingerlings. Twelve to 18 months later, they have reached angling size. Babied in a hatchery, rainbows grow fast and reach a length of 8-10 inches in their first year, 12-14 inches the second year, and top 16 inches when three years old. Growth would be somewhat less in the wild, according to food and temperature conditions.

They are large enough at 12-18 months to be stocked in streams with a good chance of survival or to furnish immediate sport to anglers. The adult rainbow trout is a far cry from the tiny, burdened creature that hatched from the egg. It is one of America's most popular game fishes—a beautiful and crafty creature of rushing waters and cold lakes. It is famed for its sporting qualities and will take both dry and wet flies and many natural baits.

Except in the creel, few anglers get the chance to really see the wily rainbow. They see it from above as a flash of silver, a fleeting shadow, or as a dark monster lurking in a deep pool. The photograph on page 17 gives a fish's-eye-view of the rainbow. It was photographed from an underwater box sunk into a trout stream.

The rainbow is not native to eastern waters, but through the efforts of hatcherymen, few suitable waters are lacking it today. Its original range included only those streams of the Pacific slope from the Sacramento River, California, northward.

The hatcherymen of federal and state conservation agencies play an important role in keeping the sport of trout fishing alive. Unlike farm-ponds and other warm waters, which do not need restocking, many trout streams are not productive enough to withstand the tremendous fishing pressure of modern America and need to be replenished annually.



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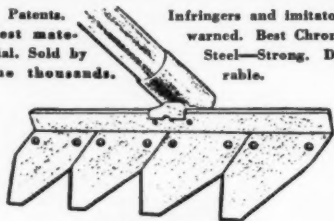
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(From page 19)

they are planted in good, moist earth, the better chance they have of survival.

There are really five different methods of planting small evergreens. If only a few hundred are to be planted, and there is no special equipment on hand to do it, holes may be prepared with a spade or even half of a posthole digger, the tree inserted to the proper depth, and then the dirt stamped firmly back against the tree roots. Be sure no air pockets are left in the hole.

If two or more people are to plant a large number of trees and a regulation "planting bar" is available, they should work in teams. Two men can then plant from 800 to 1,000 trees a day.

The "Grub hoe" method is often used by tree farmers. By it a fairly deep hole is gouged in the ground, the tree properly inserted in the hole, and the earth clod pressed tightly back in place against the roots.

Much of the back breaking effort

may be taken out of the tree planting chore by use of the Gorecki Double Planting Bar. This is a device fastened on the tractor wheel in such a way that it will dig holes at either 3 or 6 foot intervals. Using this system enables the tree planting "teams" under good conditions, to plant 1,000 trees an hour.

Tree planting machines are now on the market by means of which 2 men and a tractor driver can plant 10,000 or even more trees per day. These machines dig a trench in the ground, in which the trees are inserted by hand. Rolling wheels under the seats of the machine press the walls of the trench together so that the seedlings are quickly and almost automatically planted. This method gives particularly good results when used on gently rolling land that does not have a heavy sod.

No matter which method is used extreme care must be taken to keep the seedling roots wet at all times. The roots should have enough room so that they can spread out in fan shape and the seedling should be planted as straight in the ground as is possible. They will of course, straighten themselves as they grow.

In the years that have elapsed since I first saw the forested slopes of the Northeastern States, I have toured through all the East Coast states and, sad to say, have noticed that the forested area appears to be barely holding its own. There are entirely too many denuded hillsides and too much worthless brushwood. These eroding hillsides or brush choked pastures would look much better if planted to selected evergreens or hardwoods.

We are now slowly reforesting in this country at the rate of about three million acres a year in new tree farms alone, but nearly nine million acres were charred by fire last year. Our increasing population is creating a larger demand for most wood products and forest growth does not quite seem to compensate for the greater use of wood. To me, therefore, it seems that all forest land owners should look far ahead, increase their efforts and concentrate on better timber production. Planning and planting a new grove of trees each year, to maintain a proper balance is the best possible answer and that is what is being done on our hillsides to check erosion and replace the green forests of a hundred years ago.



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Christmas Eves-Dropping

(From page 15)

tidy. "You wanted a hole, you got a hole," so we had to drop the tree into a cavity just slightly smaller than a later excavation made for F.D.R.'s bomb shelter. They had hauled the dirt away. However, by Christmas Eve the tree stood, suitably rooted in rich, warm earth. If there are unexplained tunnels near the State Department they are not necessarily enemy-inspired. They got the dirt *somewhere*.

We built our committee as needs arose. A wonderful, strenuous publicist who worked for the Theatre Guild was included. She seemed to have the telephone numbers of everyone in Washington who might be apt to donate a platform, furnish choristers, get a national hookup over radio networks, or approach the President.

A woman from the Department of Education was included. That took care of, nicely, arrangements for a clutch of bright, shining faces, eight to fourteen, who were to light up with the Christmas tree and carol joyfully. Be it said that they showed up, beautifully rehearsed, and gave a heart-breakingly lovely performance.

Somebody just happened to think of the Washington representative of the Electric Institute, and whisk, we had a promise of bulbs for tree decoration. He was most generous. They were promised, they were supplied, they were even strung. They added no end to the gayety of the occasion because he sent them king-size. They were not the kind used today for outdoor decoration, and as the Coolidge's were leaving the stand the cold air hit them and they popped off like Chinese firecrackers.

The Coolidge's were, of course, issued a formal invitation—Ovid M. Butler, Executive Secretary of The American Forestry Association hand-carried it—and a few days later agreed, in writing, to accept the tree "as presented by the association."

"Here's a chance to put the association in the public eye, with dignity, and in connection with something symbolic—a tree," Lillian and I agreed. "Mr. Butler can give the speech."

At this point the Boss emitted the loudest and most negative "Who, me?" it has been my privilege to hear in 30 years in Washington. He'd write the speech, but he wouldn't give it.

Mr. Butler drafted and polished

a fitting talk, and then the office staff really took it up with him. He pleaded ill health, lack of platform presence, modesty about speaking when a Board member would better represent the Association. We were firm.

The last three days before Christmas Ovid Butler was a changed man. He went about muttering.

One day to live through to the Eve of Christmas! The scene was set. Imagine, if you will the White House as a background. In their most resplendent uniforms the military band filed in. A bunting-draped stand, garnished with evergreen boughs, waited with chairs carefully placed for full view of the tree. Hundreds of children stood, wriggling, ready to burst into song at a signal from their leaders. Thousands of people waited in a beautiful, dramatic hush.

Heralded by "Hail to the Chief" the President and Mrs. Coolidge entered with their entourage. She, gracious and lovely as always, aglow with Christmas—he, taking precise steps at her side.

Starlit night, bands, audience led to the moment when national net-

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work technicians signalled and our reluctant orator made a darned good speech.

All of this, mind you, building toward the words of our President, heralding the blaze of light, goodwill and fellowship he was to touch off. The crowd drew its breath. Now!

"I accept the tree, how do you turn on the lights?" Calvin Coolidge said, and sat down.

The affair tapered off with singing by the children, and the network was left with a space of unused time on its hands.

Mr. Butler made up with us just in time to say "Happy New Year" . . . and a Happy New Year to you, dear readers.

Earth Is Our Home

(From page 31)

This is not mysticism, for it expresses the mounting evidence of biological and ecological knowledge, and more important, the experience of happy, contented people. "Mysticism" better describes the arrogance of those men who confront the natural world as its master, and imagine that it was created solely for their use and convenience.

There are things which dampen this sort of arrogant pride. Two-thirds of the earth's people are underfed, yet each day there are 100,000 additional mouths to feed—we are a species hungrier than the wolves in the forest. And as a species, we live in filth that would sicken a lark of the meadow, we are clothed more poorly than the Spring flowers by the roadside.

Unlike the trees that take their little plots of earth in confidence, no matter where the seeds fall, we men are restless, anxious, tense in a profoundly unnatural way.

There is a quality of life for human existence beyond even the imagination of prayer. We have it in our grasp to attain this quality by re-entering the natural scheme of things, not as the masters we have illusions of being, but as humble participants in earth's endless life. At such time as we do this, our superiority of nature and function will make us servants of the earth and the earth's life, rather than grabbers, chislers, bawlers.

This need be no "far-off Divine event." Perhaps we are moving even now to recognize earth as our home in a deeply moral way, rather than a kingdom to be dominated and exploited.

Bequests to THE AMERICAN FORESTRY ASSOCIATION

There are many members and friends of the Association who find it impractical to contribute to its educational activities during their lifetime. Gifts in the form of a bequest are welcomed. Officers of the Association will gladly consult at any time with those who wish to know more about designating gifts for educational work in forest conservation.

Following is a paragraph suitable for incorporation in wills:

"I hereby give, devise and bequeath _____ to The American Forestry Association, Washington, D. C., a non-profit District of Columbia corporation, or its successor, or successors, for the purpose of promoting the corporate activities of said Association."

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American Cancer Society

Goose Hangs High

(From page 29)

Henry, his successor, turned the strong homing instinct of Canada geese to their own advantage. They kept a pinioned flock at the refuge which eventually produced young. The goslings returned to Seney to nest, thus establishing a permanent breeding ground.

The output of goslings reached around 1,000 in 1952 and has been slowly rising ever since. I've visited the refuge two successive years—1953 and '54—and have seen conclusive proof of the increase. During 1954, ten thousand more acres at Seney were transformed into goose nesting habitat by diking and water retention. Goose production there should mount more rapidly in the future.

Spurred by success at Seney, the Fish and Wildlife Service is spreading its operations East and West. As of now, eleven major federal refuges in the northern states have goose nesting projects in varying degrees of progress. The areas involved are in Minnesota, North and South Dakota, and Wisconsin. By the end of 1955, no less than 15 federal refuges will have full fledged geese nesting programs underway in the north central states alone. In addition, breeding geese have been sent to the Montezuma marshes in northwest New York State and federal refuges in Montana.

Several individual states have joined the goose nesting movement. During 1954 I made a survey of these states. This is what I learned:

Michigan: The wolverine state is the (state) leader in the goose nesting department. In fact, Michigan started before the Seney project got under way. Oddly enough, concentrations of nesting geese have been established in the comparatively thickly settled Lower Peninsula. Although the numbers of Canadas produced in these areas (there are four of them) are not yet large, there is every indication they will substantially increase. Latest plans include the establishment of a brand new 21,000-acre goose area along the Saginaw River valley. The Fish and Wildlife Service is expected to cooperate in settling a "resident" flock at the new area. Biological factors being what they are, before long native goslings should be forthcoming.

In all, Michigan supports nesting geese in six different areas. Original



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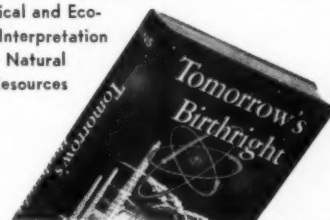
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stock on some of them came from privately owned waterfowl sanctuaries, notably the Kellogg Bird Farm.

Wisconsin: Canada geese nest in approximately 12 counties in the state, most of them in the south central part. The largest project is located in the Horicon Marsh, 60 miles northwest of Milwaukee. The Wisconsin Conservation Department didn't get started on goose nesting at Horicon until 1949, but the area has shown a steady rise in gosling production ever since. Laurence R. Jahn, in charge of waterfowl research for the state, is building up local breeding flocks by acquiring and creating sufficient nesting areas.

Idaho: A survey of the upper Snake River discloses Canada geese nesting in fair numbers on islands in the river—especially in the region of Pocatello and Idaho Falls. A goose nesting program undertaken by the Idaho Game Commission should meet with success, if suitable areas are acquired.

Washington: The state and federal governments have jointly launched a brand new waterfowl management project in the Columbia River Basin near the town of Lake Moses. Establishment of nesting Canada geese figures prominently in preliminary plans, but results will not be known for a few years yet.

As remarked before, establishment of nesting geese is not easy. It takes time. There were a lot of headaches and heartaches at Seney before a successful method was evolved. The

Fish and Wildlife Service considers the re-introduction of Canadas one of its most interesting and rewarding tasks. For the benefit of sportsmen, here's how it's done:

The original flock must be captive. Wild birds are obtained by trapping on refuges, and are pinioned so they can never fly. Eventually they will mate, and the offspring are kept on the refuge for three years by periodic wing clipping. By that time, the breeding instinct is fully developed.

When nesting time approaches during the third year, the "juveniles" are allowed complete freedom. That is a delicate period for the entire nesting program. Will the young birds yield to the migratory instinct and fly northward, or will the mating instinct prove stronger and the birds nest in the area where they were born and raised?

If they decide to mate and stick around, the first great step toward a successful goose nesting program has been made. If they take off, all the refuge manager can do is hope for better luck with next year's crop of goslings.

Fortunately, enough young Canadas have mated to get the nesting program under way. Once a pair of parent birds have accepted a nesting site, they usually return year after year, and bring their offspring with them. As most people know, Canada geese mate for life. When the second generation of birds has accepted a new nesting area, another of the main jobs of the wildlife technician has been accomplished. From then on he will be kept more busy than ever maintaining the attractiveness of the area and enlarging it to accommodate more birds.

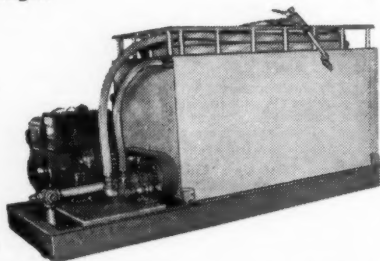
Canada geese are hard to please. They won't nest just any place and are particular about what they eat. In a completely wild state they prefer small islands in open water. They don't like brush any higher than they can see over. The idea behind these precise requirements is protection. A nesting Canada wants to see what's coming from all directions, and a small island in open water fills the bill admirably.

It is reasonable to assume that sportsmen would like to hear that stirring cry more often. If game technicians continue and expand the work that they have successfully launched, the honk of the Canada goose will become more prevalent throughout the land.

When that time comes, it can, in very sooth be said, "The Goose Hangs High."

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What's NEWS across the nation

MEMBERS OF THE NATURAL RESOURCES COUNCIL OF AMERICA found newly-appointed Assistant Secretary of Interior Wesley A. D'Ewart frank and willing to answer all questions when they conferred with him last month on conservation policy. Mr. D'Ewart, former Congressman from Montana and more recently with the Department of Agriculture, has been named assistant secretary in charge of public land management. His appointment will be given early consideration by Congress when it reconvenes. Some newspapers in the country are opposing Mr. D'Ewart's appointment as the result of proposed grazing legislation with which he was identified for several years. The bill which he introduced upon request was scored on the grounds that it would have given stockmen a vested right in public lands.

IN RESPONSE TO A QUESTION BY HENRY CLEPPER, of the Society of American Foresters, Mr. D'Ewart said that he believed that the Hope-Aiken grazing bills represented a "decided improvement" over previous grazing bills although he knew that objection has been raised to an appeals section in the proposal that would throw such appeals, in the final analysis, into District Courts. At the same time, he stressed that he was opposed to any grazing measures that would hamstring the prerogatives of the agencies in carrying out public lands policy. Stating that he felt he had been misrepresented in the past in reference to grazing, Mr. D'Ewart then stressed that "nothing will be done about grazing that will upset the present policies of the Forest Service."

ASKED IF HE WAS STILL OPPOSED TO THE CONSTRUCTION OF ECHO PARK DAM in Dinosaur National Monument (Mr. D'Ewart voted against this proposal as a member of Congress), he replied, "I voted against it. But I think you will appreciate that while I am sitting in this chair I will not oppose approved administration policy." Informed that a resolution would probably be introduced in the next session of Congress to divert certain timber holdings in Olympic National Park from the National Park Service, Mr. D'Ewart said that the department is already on record as stating that it would resist any encroachments on the park.

LOWELL BESLEY, EXECUTIVE DIRECTOR-FORESTER OF The American Forestry Association called the group's attention to the major role Mr. D'Ewart played in working out and securing the enactment of Public Law 167. The first major revision in the mining code, the new law has paved the way for correction of mining law abuses on public lands that have created a major management problem. Mr. Besley said that Mr. D'Ewart played a thoroughly helpful role in bringing groups concerned together and in having the bill enacted. President Eisenhower called the bill one of the finest pieces of conservation legislation in many years. Obviously pleased by this accolade, Mr. D'Ewart said "I think we surprised even ourselves on that one."

WILDLIFE EXPERTS PRESENT AT THE CONFERENCE showed interest in a proposal by Mr. D'Ewart that hearings be held next year in regard to all withdrawals from the public estate as they concern defense needs. He reminded the group that Secretary McKay, an old artillery man himself, was not completely inexperienced when it comes to some of the proposals advanced by defense officials. At this point Ira Gabrielson, president of the Wildlife Management Institute, said that he liked McKay's idea of turning the artillery around and firing it at the defense installations in Oklahoma thereby keeping the impact area away from the game in the Wichita Mountains National Wildlife Refuge in Oklahoma. "That idea made sense to me", Dr. Gabrielson said. "As a matter of fact it worked once before at Fort Sill." The Wichita Refuge is presently a storm

(Turn to next page)

center of controversy with conservationists protesting transfer of 10,700 acres of the area to the Army as an artillery range. Secretary McKay is opposed to the transfer.

WHEN AFA MEMBER PEARL CHASE WAS AWARDED AN INDIAN FIRE PUMP at the recent annual meeting in Jacksonville the Santa Barbara, California, conservationist promptly bequeathed it to Florida State Forester Hux Coulter whose timber resources took a grim beating from fire this year. However, based on last quarter fire loss reports from California Miss Chase might have been well advised to tote her fire pump home to her native state. For forest fires burned a staggering total of 307,000 acres of timber, watershed and recreational lands in California during an 18-day critical period from August 27 to September 13. In reporting on these losses at Governor Goodwin Knight's monthly council meeting, DeWitt Nelson, State Director of Natural Resources, said the burned area would be equivalent to a strip of land one mile wide stretching from Sacramento to Los Angeles, a distance of 400 miles.

A FIELD SURVEY JUST COMPLETED BY THE STATE FORESTER OF CALIFORNIA and the Regional Forester of the U.S. Forest Service placed commercial timber losses during the 18-day period at one and one-quarter billion board feet. This volume of timber represents about one-fourth of California's annual lumber production, and, only six states in the nation produce more lumber in an entire year, Mr. Nelson said. The value of this volume of burned timber at wholesale lumber prices would be in excess of 100 million dollars, Mr. Nelson reported. Plans are now being made to salvage as much of the burned timber as possible. Thereafter it will cost more than five million dollars to replant the area with young trees.

ALTHOUGH THE STATE AND FEDERAL FOREST AGENCIES COULD NOT PLACE A DOLLAR SIGN on watershed loss, they estimated a potential damage of more than six million dollars alone as a result of one fire that burned 72,000 acres in the Santa Ynez Mountain north and west of the City of Santa Barbara. In addition to timber and watershed damage, the survey estimated property losses including homes, buildings, equipment and other physical property at upwards of four million dollars. The fires also restricted recreational business and retarded timber production and other business activities in many areas.

THE CALIFORNIA FIELD SURVEY SHOWED THAT 436 FOREST FIRES STARTED during the August 27-September 13 period on the 50 million acres of foothill and mountain land protected by the California Division of Forestry and the U.S. Forest Service. Fifty-nine of these fires were caused by lightning but 377 were man caused. Local people living and working in or near the forest areas were responsible for two-thirds of the man-caused fires and valley and urban residents accounted for one-third. Careless use of cigarettes and matches lead the list of man-caused fires.

WHILE STATE AND FEDERAL AGENCIES SPENT MORE THAN \$3,500,000 of emergency money in controlling the fires, 41 of them exceeded 300 acres and accounted for over 300,000 of the total acreage burned. At the same time, nine of every 10 fires started during the danger period were suppressed before reaching 300 acres in size. At the peak of the fire siege on September 10, over 14,000 men, 550 bulldozers and 3,000 fire fighting, supply and service vehicles were on the job.

ESTABLISHMENT OF AN ADVISORY COMMITTEE ON SOIL AND WATER was announced last month by Ezra Taft Benson, Secretary of Agriculture, with AFA members William S. Rosecrans, Mrs. Katherine Jackson Lee and Carl Shoemaker three of the 18 members selected. At the initial meeting of the group, the entire program of the department having to deal with soil and water was reviewed. The membership of the committee which represents a wide geographical range in the nation will later be asked for its recommendations on certain key activities. Mr. Rosecrans, a former president of AFA, said he was impressed by the "cool and collected" approach of the committee members to their advisory task and said he felt a sound committee had been formed that would be able to give the department considerable assistance. Membership on the committee will be for three years and so staggered that one-third of the members will be new each year. The practical attainments of conservation goals in the department involves the use of scientific knowledge in soils, engineering, agronomy, forestry, biology, geology, economics and other agricultural and related sciences.

(J.B.C.)

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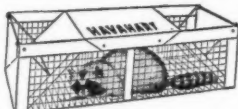
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Renaissance In Research

(From page 40)

... Let us not get back to the days when we were a bunch of one product industries with one industry making lumber and another plywood, another pulpwood, and the lumber industry going broke when its market was poor notwithstanding that there might be a good market in some of these other products.

"However, I think that is now behind us," Col. Greeley said. "The nearer we can keep our products diversified the more completely we are able to supply different types of consumer needs and the vagaries, if you are pleased to call them that, that the consumer demands, the new ideas, the latest fashions. The more you can keep the lead in creative design of new products, why the better will be our opportunity for staying in the lead as we are, I believe, today.

"There are some very interesting things happening of late," Col. Greeley said. "Combinations of lumber and paper, combinations of plywood and paper, all kinds of sandwiched products where different lumber products are put together, types of products where the impregnated resin structures are coming into play. Some of them indicate the kind of a new spirit of design—something similar to what the Italian architects of the Renaissance began to design in new structures.

Wood Utilization

(From page 23)

process, using bark that contains natural waxes.

Hardboard production in the United States has grown from a meager 5 million square feet (one-eighth inch basis) in 1925 to the present annual production of nearly 1.5 billion square feet. It is expected to reach more than 3 billion square feet by 1975—well over the present plywood production rate.

Softboards are widely used for acoustical panelling and insulating sheathing. These are made by wet-felting and drying the wet lap with little or no pressure. Softboards account for a considerable amount of residue utilization.

Chipboards are a relatively new entry in the board field. They are produced from hammer-milled or chipped wood residues or shavings bound together by synthetic resins.

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Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS will pay \$10



Photo submitted by Dante Tranquille, Utica, New York

Two deer were spotted from an airplane in the middle of frozen Honnedaga Lake, in the Adirondacks, and focused through camera

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See your dealer for details on the Homelite TIME PAYMENT PLAN



Interchangeable Blades add versatility to the new Homelite 5-20 Chain Saw. For felling, bucking, limbing or plunge cutting, there's a hard track blade for every requirement. Straight blades available from 14" to 60", bow saws 14" and 18".

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Underbucking takes less effort and is just as simple as bucking. The 5-20 is easy to handle upside down or in any position... and there's no loss of power.

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tween adjustment and replacement than is possible with the conventional dry clutch. As a result of these and other Caterpillar-developed advantages, a D8 will do *more* work at *lower* cost with *less* down time than any competitive unit.

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